Vol. 926 Number 4

# OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

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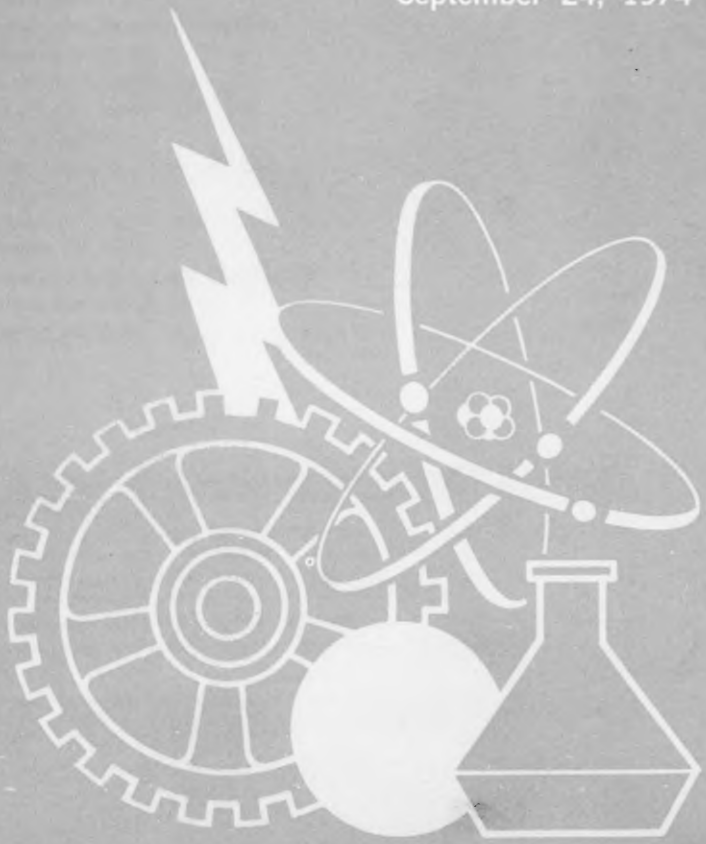
10/19/74

PATENTS

September 24, 1974



U. S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 24, 1974 Volume 926 Number 4

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# PATENT OFFICE NOTICES

## Interference Practice

[37 CFR Part 1]

*Proposed Clarification of Testimony Requirements*

Notice is hereby given that, pursuant to authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; (35 U.S.C. 6)) as amended October 5, 1971 (Pub. L. 92–132, 85 Stat. 364), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.125, 1.231(c), 1.247(c), 1.251(a)(b)(c), 1.253, and 1.277(b).

Interested persons are invited to present their views, objections, recommendations or suggestions in connection with the proposed amendment in writing to the Commissioner of Patents, Washington, D.C. 20231, on or before November 15, 1974. No oral hearings will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17a, 2021 Jefferson Davis Highway, Arlington, Virginia.

The proposed rule change is intended to clarify interference practice relating to taking and filing of testimony.

The sections, if amended as proposed, would read as follows:

§ 1.225 *Failure of junior party to file statements or to overcome filing date of senior party.*

If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of the application of another party, judgment on the record will be entered against such junior party unless he has filed a proper motion under § 1.231, within the time set for such motions, seeking some action in the interference. If such motion has been timely filed but does not result in action in the interference which removes the basis for a judgment on the record, such judgment will be entered unless the motion related to a matter which may be reviewed at final hearing under § 1.258, and within 30 days of the decision denying his motion, or a later time set by the patent interference examiner, the junior party concerned requests that final hearing be set to review such matter. Also, such a junior party may within such 30 day period, or time set, request a final hearing to review such a matter raised by his opposition to a motion under § 1.231(a)(2), (3), (4), or (5) which was granted over his opposition. Such a junior party will not be permitted to take testimony except on granting of a motion accompanied by a showing of good cause, which shuld normally include names of proposed witnesses and affidavits or declarations by them giving their expected testimony.

§ 1.231 *Motions before the primary examiner.*

* * * * *

(c) A motion to amend under subparagraph (a)(2), or to substitute another application or declare an additional interference under subparagraph (a)(3) must be accompanied by an amendment adding the proposed counts to the application concerned if such claims are not already in that application. The motion must also request the benefit of a prior application as provided for under subparagraph (a)(4) if the party concerned expects to be accorded such benefit.

* * * * *

§ 1.247 *Service of papers.*

* * * * *

(c) Certified transcripts of testimony under § 1.276 (but copies of the testimony must be served (§ 1,253(a)).

* * * * *

§ 1.251 *Assignment of times for discovery and taking testimony.*

(a) Subject to the exception provided in paragraph (c) of this section, a period for preparation for testimony will be set in which all parties should complete discovery and other preparatory activities, except for service by the senior party required by § 1.287(a)(1) which is governed by § 1.287(a)(2)(iii).

(b) Subject to the exception provided in paragraph (c) of this section, times will be assigned in which the junior party shall complete his testimony in chief, and in which the other party shall complete the testimony on his side, and a further time in which the junior party may take rebutting testimony, but he shall take no other testimony. If there be more than two parties to the interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties and to rebut their evidence, and also to meet the evidence of junior parties. If a senior party fails to file a preliminary statement, or expressly elects to rely solely on his effective filing date, he will be assigned only a time for taking rebuttal testimony, and no junior party will be assigned a time for taking rebuttal testimony unless another junior party senior to him is assigned a time for taking testimony in chief.

(c) Times for preparation of testimony for compliance with § 1.287(a) and for taking of testimony will ordinarily be assigned in notices sent to the parties after motions under § 1.231 have been disposed of or, if no such motions have been filed, after the close of the motion period (§ 1.231). Such times will not normally be assigned for a junior party who fails to file a preliminary statement or whose preliminary statement fails to overcome the prima facie case made by the effective filing date of the senior party. (See § 1.325.)

* * * * *

§ 1.253 *Copies of the testimony.*

(a) In addition to the certified transcript of the testimony (§§ 1.275 to 1.278) or executed copies of affidavits of stipulated testimony or facts (§ 1.272), and the exhibits, three true copies of the testimony of each party must be filed for the use of the Patent Office (a total of four copies), and one true copy must be served upon each of the opposing parties. Only one set of exhibits need be filed in the Patent Office.

(b) These copies of the testimony may be submitted either in printed or in typewritten form.

(c) These copies, whether printed or typewritten, must include the testimony presented by the party filing the same, a copy of the counts of the interference, the preliminary statement required by §§ 1.215 to 1.227, an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence. The pages must be serially numbered throughout the entire record and the names of the witnesses must appear at the top of the pages over their testimony.

(d) The copies of the testimony for all parties must be filed and served on the opposing parties by the date specified in the order setting times for taking testimony or such extensions as may be granted.

(e) When the copies of the testimony are submitted in printed form, they shall be printed in 11-point type and adequately leaded; the paper must be opaque and unglazed; the size of the page shall be 7⅝ by 10¼ inches (19.4 by 26 cm.); the size of the printed matter shall be 4⅛ by 7⅛ inches (10.6 by 18.2 cm.); and they shall be bound to lie flat when opened. Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no such appeal be taken, the twenty-five copies will be returned to the party filing them.

(f) When the copies of the testimony are submitted in typewritten form, they must be clearly legible on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.6 by 27.9 cm.) in size (letter size) and one of the three copies must be a ribbon copy, but need not be executed by the certifying officer. (The certified transcript may be a properly executed carbon copy. See § 1.277.) The typing shall be on one side of the paper, in not smaller than pica-type; and double-spaced with a margin of 1½ inches (3.8 cm.) on the left-hand side of the page. The sheets shall be bound at their left edges, in such manner to lie flat when opened, in a volume or volumes

of convenient size (approximately 100 pages per volume is suggested) provided with covers. Documentary exhibits should not be included in bound volumes of testimony. Multigraphed or otherwise reproduced copies conforming to the standards specified will be accepted.

(g) The testimony of any party failing to supply copies thereof as specified may be refused consideration.

§ 1.277 *Form of deposition.*

* * * * *

(b) In order to have a ribbon copy of the testimony available as required by § 1.253(f), a carbon copy of the deposition may be executed by the witnesses and the officer and filed as required by § 1.276.

* * * * *

Dated: July 26, 1974.

C. MARSHAL DANN,
*Commissioner of Patents.*

Approved:

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

[FR Doc. 74-19385; Filed 8-21-74; 8:45 am]

## Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,392,165, J. A. Edwards and L. H. Knox, deceased, by A. A. Knox, ESTRA-1,3,5(10)-TRIENES SUBSTITUTED AT THE 17α POSITION WITH A PROPADIENYL OR SUBSTITUTED PROPADIENYL RADICAL, Interference No. 97,277, decided May 10, 1974, claim 15.

Patent No. 3,392,166, J. A. Edwards and L. H. Knox, deceased, by A. A. Knox, ANDROST-4-ENES and ESTR-4-ENES HAVING A 17α-DIETHYLENICALLY UNSATURATED SIDE CHAIN, Interference No. 97,278, decided May 10, 1974, claims 1 and 20.

Patent No. 3,346,448, E. E. Glibert and B. Veldhuis, HEXAFLUOROISOPROPYL ETHERS AS ANESTHETICS, Interference No. 98,016, decided Apr. 17, 1974, claims 1 and 3.

Patent No. 3,520,585, J. Yarnell, IMAGE OR CHARACTER RECOGNITION BY HALOGRAPHIC TECHNIQUES, Interference No. 98,250, decided May 1, 1974, claims 1, 2, 3 and 4.

Patent No. 3,535,937, B. B. Wiggins, J. P. Bailey and W. M. Hart, PIPE PRESSURE MEASURING APPARATUS, Interference No. 97,742, decided Mar. 20, 1974, claims 1, 2, 3, 5, 6, 7, 8, 21 and 23.

Patent No. 3,550,213, P. A. Ormsby and E. C. Thompson, HIGH STRENGTH HOT-PRESS DIE, Interference No. 98,256, decided May 16, 1974, claims 1, 2 and 6.

Patent No. 3,564,803, A. J. Breeze, A. D. Patrick, C. Wheelock and W. D. Orwin, EXTENSIBLE SCAFFOLD AND OTHER LOAD SUPPORTING ELEMENTS, Interference No. 98,339, decided May 29, 1974, claims 1, 2, 3, 4, 5 and 7.

Patent No. 3,623,145, D. W. Gregg and R. K. Pearson, HIGH-ENERGY CHEMICAL LASER SYSTEM, Interference No. 98,304, decided May 6, 1974, claims 1, 2, 4 and 5.

Patent No. 3,679,381, H. Chessin, NOVEL COMPOSITE, Interference No. 98,440, decided May 1, 1974, claims 1, 2, 3, 8, 9, 10 and 11.

Patent No. 3,713,701, J. Penner, DETACHABLE AUXILIARY TRACTOR TIRE AND WHEEL ATTACHMENT MEANS, Interference No. 97,135, decided June 13, 1974, claim 15.

## Disclaimers

3,645,972.—*Jack L. Herz,* Scarsdale, and *Edward D. Weil,* Hastings-on-Hudson, N.Y. NITRILOTRIACETIC ANHYDRIDE AS AN EPOXY RESIN CURING AGENT. Patent dated Feb. 29, 1972. Disclaimer filed Aug. 13, 1974, by the assignee, *Stauffer Chemical Company.*

Hereby enters this disclaimer to claims 1, 2 and 4 of said patent.

3,716,089.—*James R. Bateman,* West Chicago, Ill. FEEDING ARRANGEMENT FOR SHEDDING AND BAGGING DEVICE. Patent dated Oct. 31, 1972. Disclaimer filed May 16, 1974, by the assignee, *Roper Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

## Certificates of Correction for the Week of Sept. 24, 1974

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| P.P. 3,417 | 3,755,317 | 3,779,942 | 3,792,801 | 3,798,927 | 3,804,665 | 3,808,977 | 3,813,103 |
| P.P. 3,522 | 3,755,355 | 3,780,793 | 3,793,049 | 3,798,990 | 3,804,672 | 3,809,106 | 3,813,211 |
| Re. 28,051 | 3,757,667 | 3,780,797 | 3,793,145 | 3,799,232 | 3,804,690 | 3,809,254 | 3,813,337 |
| D. 230,456 | 3,757,874 | 3,781,340 | 3,793,209 | 3,799,257 | 3,804,742 | 3,809,335 | 3,813,491 |
| D. 230,527 | 3,758,059 | 3,781,349 | 3,793,298 | 3,799,264 | 3,804,887 | 3,809,471 | 3,813,654 |
| D. 230,528 | 3,760,364 | 3,781,768 | 3,793,492 | 3,799,364 | 3,804,898 | 3,809,472 | 3,813,821 |
| 3,423,815 | 3,761,587 | 3,782,441 | 3,793,629 | 3,799,559 | 3,804,920 | 3,809,484 | 3,813,824 |
| 3,468,848 | 3,762,329 | 3,782,481 | 3,793,694 | 3,799,585 | 3,804,972 | 3,809,524 | 3,813,889 |
| 3,565,581 | 3,762,384 | 3,783,607 | 3,794,071 | 3,799,679 | 3,805,155 | 3,809,545 | 3,814,744 |
| 3,599,778 | 3,762,948 | 3,784,109 | 3,794,115 | 3,799,719 | 3,805,206 | 3,809,672 | 3,814,787 |
| 3,607,142 | 3,763,160 | 3,784,618 | 3,794,206 | 3,799,767 | 3,805,294 | 3,809,708 | 3,814,911 |
| 3,629,094 | 3,764,580 | 3,785,104 | 3,794,305 | 3,799,986 | 3,805,300 | 3,809,735 | 3,815,186 |
| 3,642,108 | 3,765,176 | 3,785,421 | 3,794,358 | 3,800,176 | 3,805,638 | 3,809,867 | 3,815,212 |
| 3,659,608 | 3,765,891 | 3,785,454 | 3,794,455 | 3,800,254 | 3,805,829 | 3,809,963 | 3,815,716 |
| 3,689,921 | 3,766,108 | 3,785,548 | 3,794,560 | 3,800,354 | 3,805,885 | 3,810,084 | 3,816,350 |
| 3,690,249 | 3,766,248 | 3,785,713 | 3,794,578 | 3,800,395 | 3,805,888 | 3,810,226 | 3,816,414 |
| 3,691,160 | 3,766,520 | 3,786,117 | 3,794,584 | 3,800,458 | 3,806,319 | 3,810,310 | 3,816,444 |
| 3,693,542 | 3,766,582 | 3,786,165 | 3,794,856 | 3,800,482 | 3,806,331 | 3,810,335 | 3,816,494 |
| 3,709,387 | 3,766,803 | 3,786,317 | 3,794,914 | 3,800,543 | 3,806,387 | 3,810,336 | 3,816,620 |
| 3,710,203 | 3,767,098 | 3,786,557 | 3,795,089 | 3,800,699 | 3,806,490 | 3,810,352 | 3,817,355 |
| 3,713,831 | 3,767,419 | 3,786,947 | 3,795,456 | 3,800,991 | 3,806,557 | 3,810,403 | 3,817,707 |
| 3,714,233 | 3,767,590 | 3,787,391 | 3,795,622 | 3,801,105 | 3,806,724 | 3,810,419 | 3,818,714 |
| 3,720,651 | 3,767,816 | 3,787,555 | 3,795,920 | 3,801,238 | 3,806,730 | 3,810,498 | 3,818,847 |
| 3,724,028 | 3,768,546 | 3,787,617 | 3,796,020 | 3,801,500 | 3,806,731 | 3,810,567 | 3,819,244 |
| 3,725,421 | 3,769,014 | 3,787,847 | 3,796,073 | 3,801,604 | 3,806,879 | 3,810,604 | 3,819,305 |
| 3,729,720 | 3,769,058 | 3,788,200 | 3,796,089 | 3,801,621 | 3,806,935 | 3,810,631 | 3,819,667 |
| 3,736,752 | 3,769,807 | 3,788,332 | 3,796,096 | 3,801,680 | 3,807,115 | 3,810,643 | 3,819,778 |
| 3,737,510 | 3,770,753 | 3,788,805 | 3,796,118 | 3,801,749 | 3,807,141 | 3,810,677 | 3,819,785 |
| 3,739,151 | 3,770,803 | 3,788,811 | 3,796,123 | 3,801,798 | 3,807,215 | 3,810,746 | 3,819,919 |
| 3,740,417 | 3,771,218 | 3,789,071 | 3,796,478 | 3,802,092 | 3,807,231 | 3,810,753 | 3,819,939 |
| 3,741,657 | 3,771,343 | 3,789,461 | 3,796,714 | 3,802,147 | 3,807,465 | 3,810,764 | 3,819,975 |
| 3,741,953 | 3,771,906 | 3,789,479 | 3,796,867 | 3,802,173 | 3,807,567 | 3,810,812 | 3,820,025 |
| 3,742,028 | 3,772,545 | 3,789,978 | 3,796,880 | 3,802,183 | 3,807,594 | 3,811,096 | 3,820,120 |
| 3,742,084 | 3,772,799 | 3,790,034 | 3,796,900 | 3,802,346 | 3,807,606 | 3,811,298 | 3,820,578 |
| 3,742,201 | 3,772,847 | 3,790,836 | 3,796,944 | 3,802,467 | 3,807,625 | 3,811,346 | 3,821,377 |
| 3,743,035 | 3,772,874 | 3,790,870 | 3,797,068 | 3,802,639 | 3,807,696 | 3,811,368 | 3,821,626 |
| 3,744,325 | 3,773,003 | 3,791,281 | 3,797,100 | 3,802,793 | 3,807,788 | 3,811,372 | 3,821,683 |
| 3,745,868 | 3,773,684 | 3,791,476 | 3,797,119 | 3,803,138 | 3,807,826 | 3,811,470 | 3,821,953 |
| 3,746,641 | 3,774,661 | 3,791,543 | 3,797,138 | 3,803,179 | 3,807,844 | 3,811,757 | 3,822,330 |
| 3,748,428 | 3,775,800 | 3,791,580 | 3,797,324 | 3,803,321 | 3,808,028 | 3,811,893 | 3,822,382 |
| 3,748,531 | 3,775,930 | 3,791,735 | 3,797,575 | 3,803,482 | 3,808,067 | 3,811,945 | 3,822,437 |
| 3,749,742 | 3,776,348 | 3,792,030 | 3,797,820 | 3,803,651 | 3,808,159 | 3,811,961 | 3,822,678 |
| 3,749,747 | 3,776,710 | 3,792,036 | 3,797,898 | 3,803,704 | 3,808,284 | 3,812,264 | 3,822,756 |
| 3,750,415 | 3,777,817 | 3,792,083 | 3,798,058 | 3,803,775 | 3,808,438 | 3,812,376 | 3,822,848 |
| 3,750,559 | 3,778,202 | 3,792,160 | 3,798,502 | 3,803,855 | 3,808,550 | 3,812,478 | 3,823,393 |
| 3,750,596 | 3,778,428 | 3,792,263 | 3,798,523 | 3,803,932 | 3,808,740 | 3,812,486 | 3,824,609 |
| 3,752,090 | 3,779,519 | 3,792,322 | 3,798,608 | 3,803,974 | 3,808,859 | 3,812,516 | |
| 3,753,754 | 3,779,627 | 3,792,754 | 3,798,876 | 3,804,452 | 3,808,872 | 3,812,827 | |
| 3,754,500 | 3,779,915 | 3,792,797 | 3,798,877 | 3,804,528 | 3,808,912 | 3,813,047 | |

# PATENT EXAMINING CORPS

## WILLIAM FELDMAN, Acting Assistant Commissioner

### CONDITION OF PATENT APPLICATIONS AS OF AUGUST 31, 1974

| PATENT EXAMINING GROUPS | Actual Filing Date of Oldest New Case Awaiting Action |
|---|---|
| **CHEMICAL EXAMINING GROUPS** | |
| GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices. | 10-9-73 |
| GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides. | 7-25-73 |
| HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes. | 11-16-73 |
| COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography. | 11-1-73 |
| SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes. | 11-1-73 |
| **ELECTRICAL EXAMINING GROUPS** | |
| INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales. | 1-23-74 |
| SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material. | 3-1-73 |
| INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts. | 11-5-73 |
| RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating. | 9-17-73 |
| ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring. | 12-13-73 |
| DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts. | 3-26-73 |
| **MECHANICAL EXAMINING GROUPS** | |
| HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment. | 10-11-73 |
| MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks. | 11-13-73 |
| AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination. | 11-2-73 |
| HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication. | 11-9-73 |
| GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines. | 12-27-73 |

**Expiration of patents:** The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

**Patents**..... Numbers 2,804,620 to 2,807,803, inclusive
**Plant Patents**..... Numbers 1,638 to 1,645, inclusive

# REISSUES

## SEPTEMBER 24, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

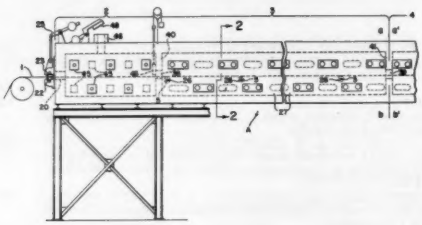
### 28,168
### EMERGENCY ATMOSPHERE ANNEALING FURNACE AND METHOD

F. Troy Cope, Salem, and Ralph J. Perrine, Columbiana, Ohio, by The Electric Furnace Co., Salem, Ohio, assignee

Original No. 3,396,951, dated Aug. 13, 1968, Ser. No. 482,381, Aug. 25, 1965. Application for reissue Aug. 1, 1973, Ser. No. 384,460

Int. Cl. F27b *9/28*

U.S. Cl. 432—8 10 Claims



Method and apparatus for protecting a strip of metal moving continuously through a heating zone, against excessive oxidative degradation during longer than normal residence in the heating zone, including a control system responsive to a reduction in strip speed which purges the oxidizing ingredients in the heating zone atmosphere with a protective gas.

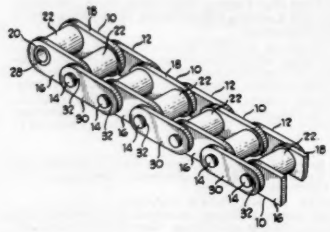
### 28,169
### MANUFACTURE OF ROLLER CHAIN

George A. Zimmer, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Original No. 3,706,199, dated Dec. 19, 1972, Ser. No. 158,199, June 30, 1971. Application for reissue June 4, 1973, Ser. No. 366,948

Int. Cl. B21l *9/02*

U.S. Cl. 59—8 2 Claims



To improve retention of the cylindrical bushings in the side plates of a roller chain, the bushing surfaces are roughened, as by shot-peening, fine knurling or fine scoring, prior to hardening. Thereafter, a side plate is press fitted on each end of the bushing, and the chain is assembled.

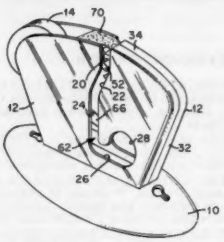
### 28,170
### DEVICE FOR TYING THE ENDS OF BAGS

Aribert J. Lehmann, 473 West End Ave., New York, N.Y. 10024

Original No. 3,729,896, dated May 1, 1973, Ser. No. 163,574, July 19, 1971. Application for reissue July 9, 1973, Ser. No. 377,785

Int. Cl. B65b *51/06*

U.S. Cl. 53—198 A 7 Claims



A device for tying the end of a bag with an adhesive tape strip severed from a tape roll, in which a slot is provided for the movement of the compressed end of a bag. A star wheel is mounted adjacent the inlet end of the slot with its poke ends overlapping the slot and serving to support the tape with its adhesive side outwardly facing. A curved spring is held by one end in close proximity of the spoke ends disposed over the slot, with its free end terminating at a midpoint of the slot width, on the inner side of the star wheel. A tape severing means, movable into severing position by the passage of a bag neck through the slot is arranged to sever the tape around the bag neck from the roll at a point spaced inwardly from the free end of the spring.

### 28,171
### LOW INSERTION FORCE CONNECTOR ASSEMBLY

John W. Anhalt, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

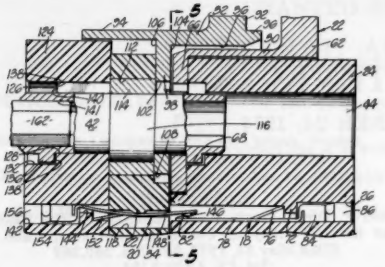
Original No. 3,587,037, dated June 22, 1971, Ser. No. 770,513, Oct. 25, 1968. Application for reissue Jan. 17, 1973, Ser. No. 324,522

Int. Cl. H01r *13/54*

U.S. Cl. 339—75 M 7 Claims

The invention comprises a connector assembly having a plug connector and a receptacle connector. Each of the connectors contains a plurality of contacts housed in openings within the connectors. The contacting surfaces of the receptacle connector contacts extend outside of the receptacle connector opening. Upon mating of the receptacle connector and the plug connector the contact surface portions of the receptacle connector contacts enter openings containing the plug connector contacts, but do not engage the plug connector contacts. Means are provided in one of the connectors to move one of the group of contacts in tandem so that the plug connector contacting surface engages the receptacle connector contacting surface. This moving means may be of the form of a plastic insert which houses the contacts and a camshaft housed therein,

rotation of the camshaft causing a portion of the plastic insert to move the contacts contained in the plastic insert



so that its contacting surfaces abut the contacting surfaces of the other connector.

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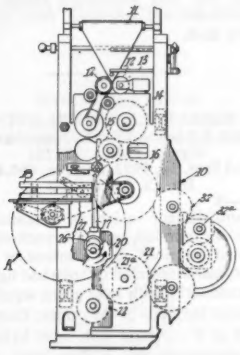
**28,172**
**ORBITAL PACKING DEVICE**

**John J. Bradley and Ernst D. Nystrand, Green Bay, Wis., assignors to Paper Converting Machine Co., Inc., Green Bay, Wis.**

**Original No. 3,256,012, dated June 14, 1966, Ser. No. 352,101, Mar. 16, 1964, which is a continuation-in-part of application Ser. No. 244,815, Dec. 14, 1962, now Patent No. 3,254,889. Application for reissue Dec. 1, 1971, Ser. No. 203,921**

**Int. Cl. B65h** *29/56*

**U.S. Cl. 271—196** **2 Claims**



*An orbital packing device having a vacuum roll for sequential handling of discrete pieces of flexible web material, and a plurality of fingers mounted adjacent the roll for removing the pieces.*

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**28,173**
**RADIATION TREATMENT OF HALOGEN CONTAINING OLEFINICALLY UNSATURATED ESTERS**

**Matthias Marx, Bad Durkheim, Albrecht Zosel, Ludwigshafen (Rhine), Herbert Spoor and Heinz Pohlemann, Limburgerhof, and Dieter Heinze, Neckaregemund, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**No Drawing. Original No. 3,627,659, dated Dec. 14, 1971, Ser. No. 743,033, July 8, 1968. Application for reissue June 22, 1973, Ser. No. 372,472**

**Claims priority, application Germany, July 11, 1967, P 17 20 283.4**

**Int. Cl. B01j** *1/00;* **C08d** *1/00*

**U.S. Cl. 204—159.22** **3 Claims**

A process for the production of coatings, impregnations or bonds by polymerization and cross-linking of mixtures containing olefinically unsaturated esters containing halogen by means of ionizing radiation.

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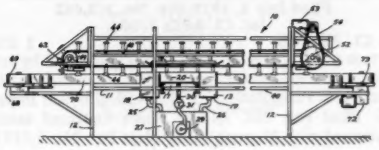
**28,174**
**APPARATUS FOR LIQUID TREATMENT OF FLAT MATERIALS**

**Winston E. Sabatka, Lakeville, Wilburn M. Bloomquist, Minneapolis, and Raymond W. Reinke, Rosemount, Minn., assignors to Finishing Equipment Inc.**

**Original No. 3,643,670, dated Feb. 22, 1972, Ser. No. 65,467, Aug. 20, 1970. Application for reissue Sept. 10, 1973, Ser. No. 395,832**

**Int. Cl. B05c** *3/10, 11/14;* **B08b** *3/04*

**U.S. Cl. 134—117** **10 Claims**



Plating or etching or other immersion treatment of lower portions only of horizontally fed, vertical positioned thin strips and arrays of workpieces is accomplished by recirculating electrolyte or the like through a bathtub provided with vertical slots to receive and discharge such workpieces. The rate of recirculation is such that an effective plating height well above the bottom of the vertical bathtub slots is maintained. A plurality of horizontally moving clamps support the workpieces and are electrically connected thereto as the workpieces move into, through, and out of the bathtub. These clamps are also electrically slidably connected to bus bars to form part of a complete electroplating circuit.

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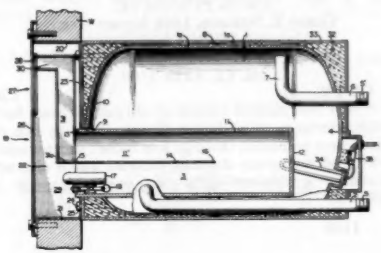
**28,175**
**HOT WATER HEATER**

**Merle J. Kimmel, Mishawaka, Ind., assignor to La Salle-Deitch Company, Inc., Elkhart, Ind.**

**Original No. 3,527,260, dated Sept. 8, 1970, Ser. No. 753,657, Aug. 19, 1968. Application for reissue Oct. 12, 1971, Ser. No. 188,522**

**Int. Cl. F22b** *7/00*

**U.S. Cl. 122—136 R** **13 Claims**



A water heater having an elongated water tank provided with a longitudinal heat exchanger tube extending the substantial length of the tank and including a combustion chamber therein defined by a baffle. A sealed vent assembly provides separate flue and combustion air chambers communicating with the heat exchanger tube and combustion chamber, respectively. Electrical elements provide independent water heating means.

# PLANT PATENTS

## GRANTED SEPTEMBER 24, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

### 3,621
### ROSE PLANT

Marie-Louise Meilland, Antibes, France, assignor to Michigan Bulb Company, Grand Rapids, Mich.

Filed July 2, 1973, Ser. No. 375,442
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 1 Claim

A rose plant of the Hybrid Tea class produced by crossing an unnamed seedling produced by crossing Royal Velvet (U.S. Plant Pat. No. 1,911) with Chrysler Imperial (U.S. Plant Pat. No. 1,167), which unnamed seedling was crossed with Pharoah (U.S. Plant Pat. No. 2,859).

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### 3,622
### PEAR TREE

Frederic W. Anderson, 826 W. 22nd St., Merced, Calif. 95340

Filed Aug. 23, 1973, Ser. No. 391,157
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—36 1 Claim

A pear tree which is of medium size, vigorous, spreading, tall, rapid growing, foliated with medium size, obovate leaves having a finely serrate margin, and a regular and very productive bearer of large, uniform, round-to-oblate, symmetrical fruit having yellow-green skin lightly blushed with red on the sunny side, and substantially white, semi-translucent flesh.

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### 3,623
### ROSE PLANT

Harry Wheatcroft, Edwalton, Nottingham, England

Filed July 19, 1973, Ser. No. 380,829
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—13 1 Claim

A new and distinct variety of rose plant of the Hybrid Tea Class, a sport of the unpatented rose variety known as Piccadilly.

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### 3,624
### CHRYSANTHEMUM PLANT ENTITLED DARK PINNACLE

Grace Y. Nakano, 1166 Bryant Ave., Mountain View, Calif. 94040

Filed Aug. 30, 1973, Ser. No. 392,953
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—81 1 Claim

1. A new and distinct variety of chrysanthemum having the characteristics of a darker flower, three to five days earlier flower response; three to five inches shorter mature growth; and numerous stamens present, which characteristics show a distinct difference over Escapade and Promenade.



### 3,625
### GRAPEVINE

Harold P. Olmo, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 14, 1973, Ser. No. 360,269
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—47 1 Claim

1. The new and distinct variety of grapevine herein described and illustrated, and identified by the characteristics enumerated above.

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### 3,626
### APRICOT TREE

Frederic W. Anderson, Merced, Calif., assignor to The Burchell Nursery, Inc., Modesto, Calif.

Filed Aug. 23, 1973, Ser. No. 391,011
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—39 1 Claim

An apricot tree which is large, vigorous, spreading, foliated with large, cordate leaves having a crenate margin, and a regular and very productive bearer of uniform, large, globose-to-oblong, freestone fruit having yellow skin and yellow flesh.

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### 3,627
### MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Sept. 24, 1973, Ser. No. 400,420
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—8 1 Claim

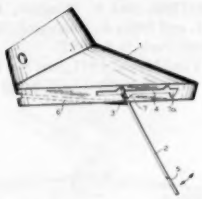
1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by slender, very yellow buds (sometimes tinted or splashed lightly with red when grown outdoors) with long green sepals which tend to remain against the buds as they open, instead of reflexing downward as is common with most hybrid tea roses, and flowers resembling the Yellow Doll (Pat. 2,450) miniature rose in color and general effect but less double, the petals of which are generally more broad and the color being a darker yellow; the bush being more spreading when young; and further characterized by a plant which is vigorous in growth, yet compact, easy to propagate from cuttings, with small to medium size, medium to dark green foliage, an abundance of bloom, with flowers borne singly and several to the stem (on mature plants) in well arranged clusters.

# PATENTS

## GRANTED SEPTEMBER 24, 1974

## GENERAL AND MECHANICAL

**3,837,005**
**DEVICE FOR THE PROTECTION OF THE EYES AND FACE**
**Anders Persson, Lievagen 16, 752 48, Uppsala, Sweden**
**Filed Jan. 12, 1973, Ser. No. 322,989**
**Claims priority, application Sweden, Jan. 14, 1972, 415/72**
**Int. Cl. A61f** *9/04*
**U.S. Cl. 2—10** **3 Claims**



A device for the protection of the eyes and face when driving a vehicle or welding or the like having a shield member integral with or attached to a protective helmet and an adjustable sight plate connected to the shield member so as to be placed in an extended operative position or a retracted folded position.

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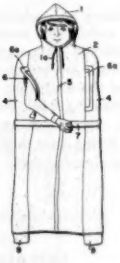
**3,837,006**
**SPORTSMAN'S TENT**
**Blanche E. Laseman, 1309 41st St., Lubbock, Tex. 79602**
**Filed Sept. 4, 1973, Ser. No. 394,097**
**Int. Cl. A41d** *3/08, 15/04*
**U.S. Cl. 2—89** **6 Claims**



The sportsman's tent comprises a tent-like garment having a hood for enveloping the entire head of the sportsman except his face. A draw-string is provided to confine the hood closely around his face. The tent walls are formed integrally with the hood and consist of a tailored front wall, a tailored rear wall, and tailored side walls adapted to hang loosely from the sportsman's shoulders. A belt extends around the tent adapted when drawn taut to shorten the overall length of the tent above the sportsman's feet to facilitate walking. And a removable floor is secured to the bottoms of the tent walls to serve as a tent floor or as a part of a carrying case when the tent is folded for carrying purposes.

**3,837,007**
**REFLECTORIZED SLEEVES**
**George G. Girest, P.O. Box 460, Belmar, N.J. 08736**
**Filed Apr. 10, 1973, Ser. No. 349,830**
**Int. Cl. A41d** *27/10, 29/00;* **G02b** *5/12*
**U.S. Cl. 2—93** **2 Claims**

A shirt or jacket having sleeves with spaced wide stripes of reflectorized material running from the wrist to the shoulder and/or a pair of light weight similar auxiliary sleeves adapted to be worn over a traffic officer's uniform after dark or during inclement weather. The high degree of visibility of the long reflectorized stripes illuminated by vehicular headlights not only facilitates the clear discernment of an officer's traffic directions regardless of the position in which he is standing, thus eliminating possible uncertainty and confusion on the part of drivers and pedestrians, but also protects him from accidents.

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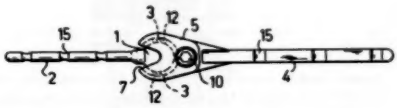
**3,837,008**
**ENDO-PROSTHESIS FOR A WRIST JOINT**
**Andre Bahler; Norber Gschwend, and Heinrich Scheier, all of Zurich, Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland**
**Filed Aug. 31, 1972, Ser. No. 285,133**
**Claims priority, application Switzerland, Sept. 6, 1971, 13014/71**
**Int. Cl. A61f** *1/24*
**U.S. Cl. 3—1** **11 Claims**

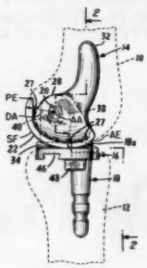


The wrist joint prosthesis is formed of a spherical head and a two-part socket. The socket allows the head and attached shaft to move via at least one appendage within a guideway parallel to the mating plane of the socket parts while also allowing the head and shaft to move transversely of the socket within mouthlike openings in the socket parts.

## 3,837,009
## KNEE PROSTHESIS

**Peter S. Walker, New York, N.Y., assignor to New York Society for the Relief of the Ruptured and Crippled, New York, N.Y.**

**Filed Dec. 7, 1972, Ser. No. 312,850**
**Int. Cl. A61f** *1/24*
**U.S. Cl. 3—1** **19 Claims**

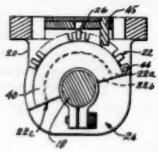


A knee joint prosthesis comprises a femoral component having a pair of laterally spaced-apart condylar portions received on the femoral condyles and having surfaces shaped substantially to match the shapes of the condylar surfaces of the femur and an intercondylar portion connecting the femoral components together. The intercondylar portion has a medial slot that opens toward the tibial plateau. A tibial component in the form of a generally plate-like platform is placed on the tibial plateau and has laterally spaced-apart tibial surfaces disposed opposite from and supporting the condylar surfaces of the femoral component. A post extends upwardly from the tibial component into the slot in the femoral component, and an axle extends transversely through openings in the post and the intercondylar portion of the femoral component to connect the tibial and femoral components together in hinged relation for relative pivotal movement of the components about a transverse pivot axis to afford flexion of the leg.

## 3,837,010
## PROSTHETIC ELBOW WITH RESILIENT LOCKING ASSEMBLY

**Wesley C. Prout, Kankakee, Ill., assignor to Parke, Davis & Company, Detroit, Mich.**

**Continuation-in-part of Ser. No. 235,054, March 16, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 338,281**
**Int. Cl. A61f** *1/06*
**U.S. Cl. 3—12.3** **16 Claims**

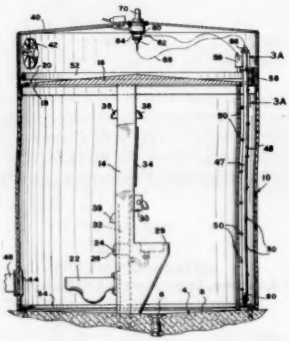


A prosthetic elbow for an amputee. First and second connector parts are adapted to be connected to an artificial upper arm and an artificial lower arm, respectively, for the amputee. The second connector part is rotatably mounted on the first connector part. A lock is used for selectively stopping the rotation between the first and second connector parts and comprises: a gear assembly having an outer gear part with gear teeth therein; a hub separate from and for the gear part; means rigidly connecting the hub to one of the connector parts; a resilient member connected to the gear part and hub and providing therebetween a resilient mounting; a locking member; means for movably mounting the locking member on the other of the connector parts so as to enable selective engagement between the locking member and gear teeth to thereby stop relative rotation, through the resilient means, of the first and second connector parts. The locking member is selectively moved into and out of engagement with the gear teeth.

## 3,837,011
## SELF-CLEANING RESTROOM, AND METHOD FOR CLEANING A RESTROOM

**Gilbert T. McTighe, 804 N. Windsor, Apt. 10, Mitchell, S. Dak. 57301, and Sture A. Johansson, Barrett Gardens, Apt. 14 M, Kendall Park, N.J. 00824**

**Filed May 4, 1971, Ser. No. 140,227**
**Int. Cl. A47k** *17/00;* **E03d** *11/12*
**U.S. Cl. 4—1** **13 Claims**



A restroom including an enclosure, and bathroom fixtures mounted centrally within said enclosure on a pedestal. The restroom is automatically cleaned by moving a vertical spray boom around the inner periphery of the enclosure to spray both the sidewall of the enclosure and the fixtures mounted therewithin with cleansing fluid, the fluid then being drained from the enclosure, after which any accumulated vapors are exhausted. Heated drying air is then passed through the enclosure to complete the cleaning cycle.

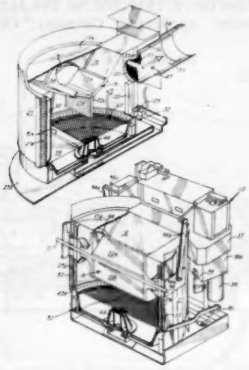
## 3,837,012
## INCINERATING TOILET

**Volker Rassbach, Denver, and Clyde W. La Grone, Littleton, both of Colo., assignors to Eliminex Technology Inc., Wheatridge, Calif.**

**Filed Jan. 2, 1973, Ser. No. 320,166**
**Int. Cl. A47k** *11/02*
**U.S. Cl. 4—131** **20 Claims**

A container having a conventional toilet seat and cover, includes an inner rotating pan to catch waste, separate liquid, and after use to rotate to dump solid from the pan onto an incinerating hearth. The separated liquid flows into a jacket defining the firebox side wall for evaporating liquid during the incineration of the solids. The rotary pan is movable from a sealed position, which seals the fire chamber from the seat, to a rotating position spaced therefrom. Air is forced into the unit maintaining it under positive pressure and provide a posi-

tive circulation of air throughout the fire chamber. Solids are initially dried and incinerated on a solid hearth following one use cycle, and then are scraped onto a grill for open flame incineration following the next use cycle. Lifting and lowering the toilet seat activates the device.



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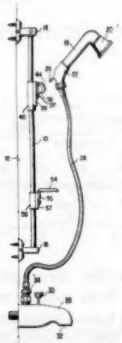
**3,837,013**

**MOVABLE SHOWER HEAD AND SOAP TRAY ASSEMBLY**

**Oliver Thurston Davis, and Norman R. Jones, Rt. 1, P.O. Box 33, both of Dunlap, Tenn. 37327**

**Filed Apr. 26, 1973, Ser. No. 354,744**
**Int. Cl. A47k** *3/22*
**U.S. Cl. 4—145** **7 Claims**



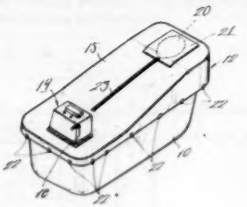
A movable shower head and soap tray assembly having an elongated rod adapted to be mounted on the wall of a shower. A holder for a shower head is slidably mounted on and frictionally held at any desired position on the rod. The shower head holder has a plurality of recesses for maintaining a removable shower head at a plurality of angles with respect to the vertical. A soap dish is also slidably mounted on and frictionally held at any desired position on the rod.

**3,837,014**

**DEVICE ADAPTING AN EXISTING DOMESTIC BATHTUB FOR STEAM OR DRY HOT-AIR BATH**

**Kenichi Sugiyama, 1236-7-506 Edamachi, Yokohama, Japan**

**Filed Jan. 12, 1973, Ser. No. 323,258**
**Claims priority, application Japan, Jan. 14, 1972, 47-6321**
**Int. Cl. A61h** *33/12*
**U.S. Cl. 4—162** **6 Claims**



A device adapting an existing domestic bathtub for steam or dry hot-air bath comprising a base framework, an end plate hinged to said framework, a detachable cover member positioned over said framework and end plate having openings adjacent the opposite ends one of which openings is for receiving a user's head and the other of which openings is for detachably mounting a heater and cut means extending between said openings for opening or closing by a slide fastener.

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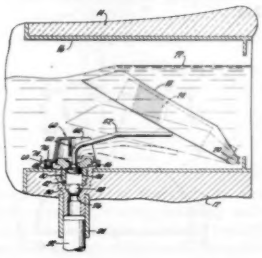
**3,837,015**

**WATER LEVEL CONTROL FOR SWIMMING POOL**

**Brackston T. Whitaker, Tucson, Ariz., assignor to Baker Hydro, Inc., Santa Ana, Calif.**

**Filed Aug. 14, 1972, Ser. No. 280,218**
**Int. Cl. G05d** *9/00;* **F16k** *33/00;* **E04h** *3/16*
**U.S. Cl. 4—172.17** **16 Claims**

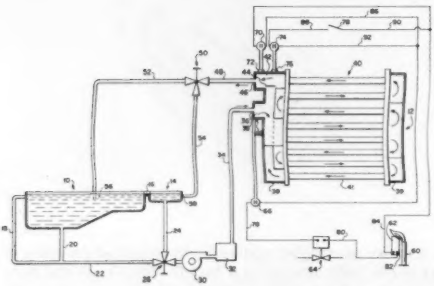


A valve through which water from a water supply source may be admitted to a swimming pool is located in the throat of the skimmer of the pool beneath a weir pivotally supported at the entrance of the throat and biased in yielding opposition to the flow of water into the skimmer as the water circulating system of the swimming pool is operated to draw water through the skimmer and return it to the pool. The water admitting orifice of the valve is fitted with a shroud which directs the water generally toward the inner side of the weir, and an operating lever arm for the valve is disposed beneath the weir so that the weir, upon being pivotally moved downwardly beyond a predetermined position, will engage the valve control lever and depress it, thus opening the valve to admit water into the pool.

## 3,837,016
## PLURAL TEMPERATURE LEVEL FLUID HEATING SYSTEM

Herbert Schindler, North Hollywood, and Willard O. Ware, Stockton, both of Calif., assignors to M.M.S. Limited, Alameda, Calif.

Filed Apr. 11, 1973, Ser. No. 350,098
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.17 10 Claims

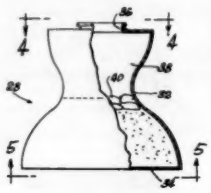


Plural temperature level fluid heating system characterized by an improved temperature control system capable of controlling fluid temperature at two different levels, said fluid being heated in a single heater, temperature of the fluid being controlled by a thermostatically operated electrical circuit which responds to a rise in temperature beyond specific set points selectively breaking a series circuit with the heater energizing means to interrupt the fuel supply to the heater.

## 3,837,017
## SYSTEM FOR TOILET BOWL CLEANING

Richard L. McDuffee, R.R. 1, Box 732 L, Aurora, Ill. 60007

Filed Oct. 7, 1971, Ser. No. 187,354
Int. Cl. E03d 9/03; C02c 1/00
U.S. Cl. 4—228 5 Claims

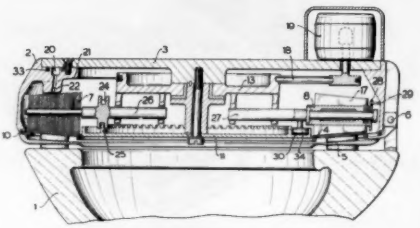


A system for cleaning toilet bowls wherein a container is located within a water tank associated with the bowl with a cleaning compound such as calcium hypochlorite being included within the container. A small diameter opening is provided within the container, and this provides exposure to water in the tank so that the compound will be dissolved in the water and thereby delivered to the bowl when the toilet is flushed. An amount of inert particles such as stone may be included in the container to cooperate with the small diameter opening for purposes of limiting the rate of removal of the compound from within the container. The container preferably consists of an ellipsoidal body having a reduced diameter mid-section with this design providing a further means for limiting the rate of removal of the compound.

## 3,837,018
## APPARATUS FOR AUTOMATICALLY CLEANING TOILET SEATS

Walter Haberle, 6368 Bad Vilbel, Germany

Filed Oct. 2, 1972, Ser. No. 294,442
Claims priority, application Germany, Oct. 1, 1971, 2149097
Int. Cl. A47k 13/00
U.S. Cl. 4—233 16 Claims

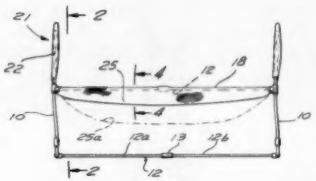


An apparatus for automatically cleaning a toilet seat, which includes a cleaning unit equipped with brushes and wiping means and adapted to be folded toward and away from the toilet bowl, the cleaning unit being adapted to spray cleaning fluid and disinfectant upon the toilet seat and by means of the cleaning unit to clean the toilet seat and wiping the same dry.

## 3,837,019
## MODULAR CRADLE-LIKE STRUCTURE

Jeffrey Alan Hoff, 234 W. 10th St., New York, N.Y. 10014

Filed Mar. 12, 1973, Ser. No. 340,477
Int. Cl. A47c 27/08; A47d 9/00, 7/00
U.S. Cl. 5—93 R 11 Claims



A modular cradle-like structure in which a frame, detachably built up from tubular members and socketed couplings, and having bowed triangular ends joined in spaced parallel alignment by spacers connecting aligned sides of said triangles at approximately their mid-points, provides suspending means for a unitary body support, said body support being formed of flexible sheet material having generally traingular end pockets for engagement with upwardly oriented apexes of said triangular ends, and means along opposed edges intermediate said pockets for detachably securing the same to the two upwardly oriented spacers.

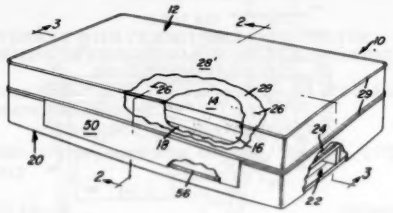
Whether produced as a small, infant cradle device, or a large adult camping or emergency slecping unit the modular construction of the frame and flexible body support permits stowing of the disassembled parts in a minimum of space.

3,837,020

## MATTRESS AND MATTRESS FOUNDATION

Samuel Bosch, 360 Stanley Dr., Kingston, Pa. 18704

Filed May 23, 1973, Ser. No. 363,110
Int. Cl. A47c 21/00, 27/00
U.S. Cl. 5—317 R 6 Claims




A mattress assembly having a mattress foundation and a mattress selectively attachable to the foundation in position shifting prohibiting relationship. The mattress has a plurality of tufted-together layers of differing density foamed material. The layer arranged adjacent the foundation is the most firm, while the layer spaced farthest from the foundation is the softest. A frame provided with a covering layer of foamed material arranged for contacting the mattress forms the foundation.

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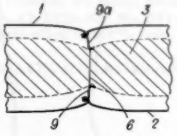
3,837,021

## SLEEPING QUILT

Brian Sellers, West Lothian; Harry Graham Usher, Edinburgh, and Thomas William Lawrie Kay, Midlothian, all of Scotland, assignors to R. Mackness & Company Limited, Edinburgh, Scotland

Filed May 23, 1972, Ser. No. 255,971
Claims priority, application Great Britain, June 3, 1971, 18833/71
Int. Cl. A47c 23/00, 27/18
U.S. Cl. 5—334 R 1 Claim




There is disclosed a thermal insulating material especially suitable for a bed quilt in which there is a filling in the form of a coherent sheet or strip enclosed between two layers of sheet material, lines of stitching are formed between the layers of sheet material and pass through the filling, the stiches being such that whilst it prevents any substantial movement of the filling relative to the material in use, the layers of material along the lines of stitching will be held apart by the pressure of the filling. The layers of sheet material may be spaced strips of material extending along each side of the filling, the stitching passing through the strips, an outer cover which may be secured to the strips may be provided.

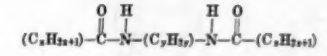
3,837,022

## FIBERS FOR PILLOW STUFFING

Paul W. Moore, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 30, 1973, Ser. No. 346,334
Int. Cl. A47c 27/22
U.S. Cl. 5—355 12 Claims

Synthetic staple fibers having improved resilience, softness and non-scroopiness and which are suitable for use as bed pillow stuffing, are produced by melt spinning filaments from a blend of fiber-forming polymer of propylene and at least one wax compound having the formula



wherein $x$ and $z$ are integers in the range of 10 to 25 and $y$ is an integer in the range of 2 to 10, drawing, heating and crimping the resulting filaments and cutting the crimped filaments into staple fibers, the filaments being coated with an ethoxylated polysiloxane.

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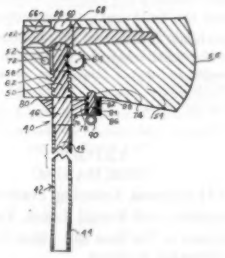
3,837,023

## MULTIPURPOSE IMPLEMENT FOR PERFORMING DESTRUCTIVE OPERATIONS

Ronald Spencer-Foote, 2672 Hubbard St., Brooklyn, N.Y. 11235

Filed Oct. 7, 1971, Ser. No. 187,345
Int. Cl. B25f 1/02
U.S. Cl. 7—8.1 R 7 Claims



A multipurpose implement for carrying out destructive operations such as cutting, tearing, breaking, and the like. The implement includes an elongated handle assembly for transmitting forces such as impact forces, wedging forces, pushing forces, pulling forces, twisting forces, and the like. A plurality of tools are available for selective connection with the handle assembly to receive the above forces therefrom, these tools being capable of carrying out operations such as wood-cutting and wood-breaking operations, metal-cutting and metal-tearing operations and lock-pulling as well as lock-breaking operations. A connecting structure is carried on the one hand by the handle assembly and on the other hand by each of the tools for selectively connecting the tools to the handle assembly, at least some of the tools being capable of connection with the handle assembly in a number of different positions, and at least some of the tools being capable of being connected simultaneously to the handle assembly. Also, at least some of the tools are capable of connection simultaneously to the handle assembly in a selected one of a number of different positions with respect to each other. The tools which can be selec-

tively connected either separately or simultaneously to the handle assembly include an axe-head, capable also of functioning as an adze, a pike, a sheet-metal cutter capable also of functioning as a plaster and lath breaker, and a lock puller, with the axe-head in certain positions also having a chisel function.

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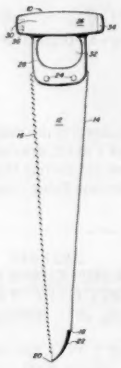
**3,837,024**
**SPORTSMAN'S SAW**
**Martin R. Saunders, Box 1105, Elko, Nev. 89801**
**Filed Mar. 13, 1973, Ser. No. 340,754**
**Int. Cl. B25f *1/00***
**U.S. Cl. 7—8.1 R** **9 Claims**



A unique sportsman's saw includes a blade having one edge carrying coarse saw teeth and a second edge carrying fine saw teeth. The sawblade is attached to a handle which is adapted to be held in the hand when the sportsman's saw is used as a saw. The handle is further fashioned to serve as a hammer head when the blade of the saw, preferably housed in a scabbard, is held in the hand.

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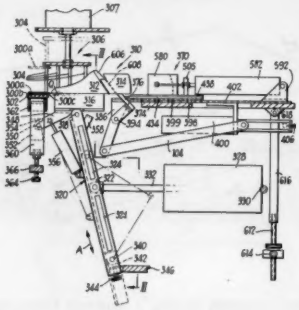
**3,837,025**
**SHOE MAKING**
**Charles Alfred Lockwood, Kettering; Frederick William Frank Goffe, Broughton, and Ronald Julian, Kettering, all of England, assignors to The Shoe and Allied Trades Research Association, Kettering, England**
**Filed Apr. 6, 1973, Ser. No. 348,710**
**Claims priority, application Great Britain, Apr. 11, 1972, 16727/72**
**Int. Cl. A43d *11/00, 3/00***
**U.S. Cl. 12—54.1** **46 Claims**

A shoe upper preforming apparatus includes a clamp for gripping the forepart of a fully closed upper to be preformed, a backpart mould, and a forepart mould. Actuators are provided for first moving the backpart mould along an arcuate path into a moulding position within the upper and thereafter moving the forepart mould into the moulding position. The movement of the forepart mould comprises bodily movement having components both upwards and forwards relative to the shoe upper and rotary movement, the bodily movement being effected initially with the toe end of the forepart mould raised, and the rotary movement causing the toe end to move downwardly as the forepart mould is brought to its final moulding position. When the moulds are in the moulding position they interfit to define a moulding surface corresponding to the whole of the upper, which surface may be in the shape of the last or a development of the shape of the last. The backpart mould may be cooled and the forepart mould may be heated or cooled according to the type of material to be formed. A gauge is provided for determining the height of the heel of the upper relative to the backpart mould when the backpart mould is moved to its moulding position, and a female back former is provided for assisting in the forming of the backpart of the upper. A wiper mechanism is included for wiping the lasting margin of the backpart of the upper beneath



the backpart mould. The clamp can be formed in two halves which can be pivoted apart for accommodating different sizes of mould, which may therefore be removable from the machine, and power means may be provided for effecting the pivoting of the two clamp halves so that the upper can be loaded into the clamp in a relatively flat condition and then the clamp halves pivoted towards each other in preparation for the moulding operation.

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**3,837,026**
**SAFETY FOOTWEAR AND MANUFACTURE THEREOF**
**John R. White, Woodbridge, Conn., assignor to Uniroyal, Inc., New York, N.Y.**
**Division of Ser. No. 360,210, May 14, 1973. This application Oct. 9, 1973, Ser. No. 404,473**
**Int. Cl. A43d**
**U.S. Cl. 12—146 D** **9 Claims**

Disclosed are an article of safety footwear, a method of making the same, and a safety toe cap assembly adapted to be used in making such footwear. The article of safety footwear has a rigid, crush-resistant toe cap located in its toe region and having its outer surface bonded to the interior of the upper of the footwear article, a cushioning layer of resilient, compressible cellular (open-celled or closed cell or having both open and closed cells) cured elastomeric polymeric material, typically formed of open-celled cured cellular polyurethane,

covering and being bonded to the inner surface of the toe cap, and a lining of stretchable fabric having a low coefficient of friction covering and being bonded to the inner surface of the cushioning layer. The method of the invention is particularly characterized by the fact that it enables safety footwear to be manufactured at high production rates in marked contrast to conventional methods of making safety type footwear in which many hand fitting operations are normally involved.

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**3,837,027**

## VEHICLE WITH DEPOSITABLE RAMP FOR THE FORMING OF BRIDGES, PARTICULARLY FLOATING BRIDGES AND FERRIES

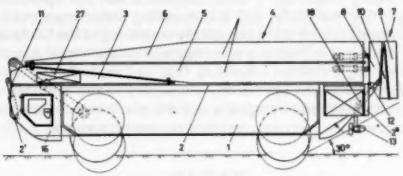
**Hermann Walter Gehlen, Pirmasenser Strasse 60, 675 Kaiserslautern/Pflaz, Germany**

**Filed Mar. 7, 1973, Ser. No. 339,027**

**Claims priority, application Germany, Mar. 11, 1972, 2211912**

**Int. Cl. E01d *1/00***

**U.S. Cl. 14—27** **5 Claims**



Vehicle with depositable ramp for forming floating bridges or ferries having short drive-on ramps at both ends, one of which is coordinated with the end over which the depositable ramp is swung and is the depositable member for the depositable ramp connected in the swing position with the depositable ramp. Furthermore the drive-on ramp that is in the form of a depositable member has a shape that is adapted to the obliqueness of the depositable ramp, and the vehicle body has a deck which extends evenly throughout its entire length, where the drive-on ramp that is not a depositable element is foldable and in the unfolded condition corresponds to the form and size of the drive-on ramp that is the supporting member.

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**3,837,028**

## FLOOR TREATING MACHINES

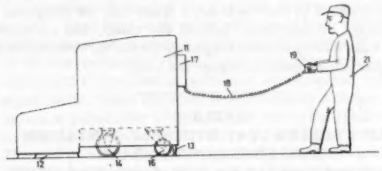
**Samuel Douglas Bridge, Wiltshire, England, assignor to R. G. Dixon & Company, Limited, Wembley, Middlesex, England**

**Filed Sept. 22, 1972, Ser. No. 291,427**

**Claims priority, application Great Britain, Sept. 23, 1971, 44486/71**

**Int. Cl. A47l *11/16*; B62d *11/04***

**U.S. Cl. 15—50 R** **1 Claim**



An electrically powered floor-treating machine having at least one drivable floor-engaging wheel and a remote control panel connected to the machine and adapted to be operated by an operator walking along with the machine and having facilities for controlling the steering and application of power to the drivable wheel or wheels.

**3,837,029**

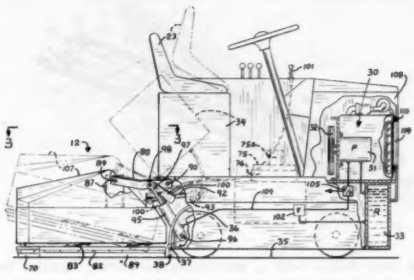
## SCRUBBING MACHINE

**Joseph G. Kasper, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.**

**Division of Ser. No. 72,275, Sept. 15, 1970, Pat. No. 3,702,488. This application Oct. 24, 1972, Ser. No. 299,846**

**Int. Cl. A47l *11/18***

**U.S. Cl. 15—50 C** **8 Claims**



A scrubbing machine having a drive unit on which an operator can sit, and a separate scrubbing unit mounted for movement independently of the frame of the drive unit. The scrubber uses double brushes driven under power which will pick up debris from and scrub surfaces on which the unit is operating. The drive unit as shown operates on a dry surface because the scrubbing unit is trailing.

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**3,837,030**

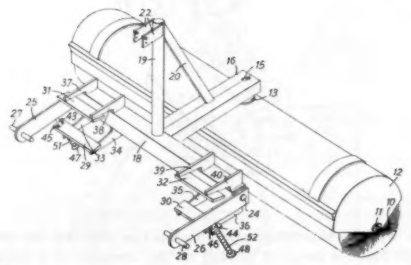
## GROUND TREATING APPARATUS

**Heinrich Fritz Liebrecht, Norfolk, England, assignor to Leeford (London) Limited, London, England**

**Filed Mar. 19, 1973, Ser. No. 342,527**

**Int. Cl. E01h *1/05***

**U.S. Cl. 15—82** **2 Claims**



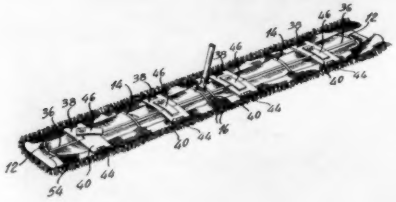
The invention relates to a rotary brush or like ground treating apparatus in which the brush or the like is mounted on a frame which is carried by means such as pivotal arms for attachment to the ball jointed links of a tractor so that either end of the frame can move vertically independently of the other end.

**3,837,031**

## MOP FRAME

**Eugene Joseph Allaire, 5525 Trent Ave., Apt. 207, and Eugene Paradis, 4933 Coolbrook, both of Montreal, Quebec, Canada**

**Filed Feb. 8, 1973, Ser. No. 330,739**
**Int. Cl. A47l *13/252***
**U.S. Cl. 15—150** **7 Claims**



A mop frame with a universally connected handle, the frame being adaptable to mop material in sheet form which is folded over the edges of the frame and clamped down by opposed hinged clamps held down by lock strips which straddle the hinge points of the clamps.

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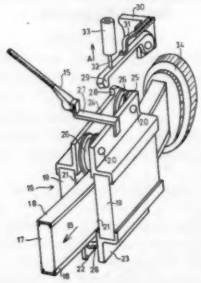
**3,837,032**

## APPARATUS FOR CLEANING WINDSHIELDS OR THE LIKE

**Gerhard Ulbrich, Buhl, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Oct. 13, 1972, Ser. No. 297,374**
**Claims priority, application Germany, Oct. 23, 1971, 2152978**
**Int. Cl. B60s *1/16*, *1/34***
**U.S. Cl. 15—250.17** **7 Claims**



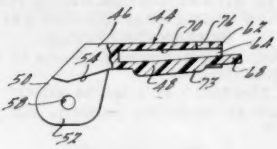
A windshield wiping apparatus wherein the arm for the wiper blade is mounted directly on the armature of a linear electric motor. The inductor of the motor serves as a guide for the armature, and its curvature conforms to that of the lower edge portion of the windshield. The armature can be held in the parking position of the wiper blade by a locking lever which is disengaged from the armature by an electromagnet in response to closing of a master switch which is operated by the driver to start the motor. The armature automatically returns the wiper blade to parking position when the master switch is opened.

**3,837,033**

## WINDSHIELD WIPER CONSTRUCTION

**Johan H. van den Berg, Hasselt; Albert J. G. Hoebrechts, Mechelen, and Alex Herman A. M. Van Eekelen, Hasselt, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium**

**Filed May 4, 1972, Ser. No. 250,340**
**Int. Cl. B60s *1/40***
**U.S. Cl. 15—250.32** **9 Claims**



A windshield wiper assembly including a wiper arm, a flexible wiping blade and a blade superstructure for operatively supporting the blade, and a connecting element adapted to detachably secure the subassembly consisting of the blade and the blade superstructure upon one end of the wiper arm, the connecting element comprising first and second integral attachment sections operatively connected to the arm and the superstructure and being of a molded, one-piece construction fabricated of a corrosion resistant polymeric material.

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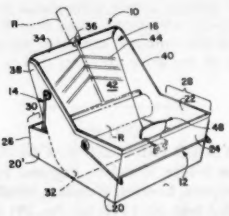
**3,837,034**

## PAINTER'S CADDY

**Willis M. Leffert, and S. Douglas Leffert, both of Monroe Manor, Apt. No. 10, 25 Monroe St., Westiminster, Md. 21157**

**Filed Sept. 22, 1972, Ser. No. 291,338**
**Int. Cl. B44d *3/12***
**U.S. Cl. 15—257.06** **3 Claims**



A painter's utensil combining a paint reservoir, a side flanged upslanting roller-ramp having a roller-retaining notch, an upper edge canted as a roller stop and a lower edge faired into the reservoir bottom; a dual brush-position clip for brushes forward in the reservoir, a ready-tray for putty and a tool storage compartment behind the ramp; and co-acting pivotal bails having interlocking looped ends for stability, with ladder hangers adapted to engage the loops.

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**3,837,035**

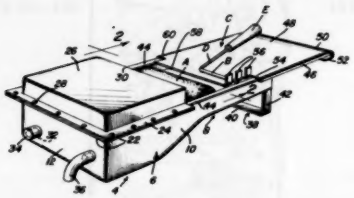
## PAINT ROLLER TRAY WITH SELF-CONTAINED ROLLER CLEANING MEANS

**Arne Habostad, 6000 24th Ave. N.W., Seattle, Wash. 98107**

**Continuation-in-part of Ser. No. 142,593, May 12, 1971, Pat. No. 3,732,593. This application Apr. 5, 1973, Ser. No. 348,057**
**Int. Cl. B44d *3/12***
**U.S. Cl. 15—257.06** **8 Claims**

An elongated paint containing roller brush accommodating tray which, broadly stated, is structurally and functionally

similar to commonly used trays and pans but is unique in that it has a relatively deep fixedly covered sump at its forward end and a companion tapering relatively shallow trough-like roller guide at its rearward end provided with a slidably shiftable lid. The longitudinal side walls of the roller guide are provided with flange means on channel-type tracks on said lid which are slidingly keyed. The extreme rearward end is provided with a



tray stabilizing and supporting prop. Emptying and draining necks are provided on the forward end. The adjacent coacting ends of the fixed sump cover and shiftably slidable lid provide a space for passage of a stream of water from a manually held properly aimed garden hose. When the brush is used and held in the covered sump the force-fed stream of water serves to spin and cleanse the brush and also the interior surfaces of the walls of the overall tray.

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**3,837,036**

## APPARATUS FOR WIPING EXPOSED CONVEX SURFACES OF LENSES ON HEAD LIGHTS OF AUTOMOTIVE VEHICLES OR THE LIKE

**Karl-Heinz Burger; Manfred Hoffmann-Clewe, and Willi Schaper, all of Buhl, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Apr. 27, 1972, Ser. No. 248,125**

**Claims priority, application Germany, May 3, 1971, 2121730**

**Int. Cl. B60s** *1/32, 1/38*

**U.S. Cl. 15—250.23** **8 Claims**

Apparatus for wiping the exposed convex surface on the lens of a head light in an automobile has a lever which is oscillatable about an axis passing through the center of curvature of the convex surface. The lever is pivoted to an arm which is connected to the central portion of an elongated deformable wiper blade. When the lever is oscillated by a motor, the arm moves in parallelism with itself and moves the blade sideways so that the latter sweeps the major part of the convex surface. The end portions of the blade bear against stops provided on the head light when the blade leaves a central position and approaches either of its two end positions whereby the arm flexes the blade and maintains an elastic lip of the blade in full contact with the convex surface. The axis of the lever is coplanar with the blade when the latter assumes its central position. A torsion spring reacts against the lever and biases the arm in a direction to urge the median portion of the blade against the convex surface.

**3,837,037**

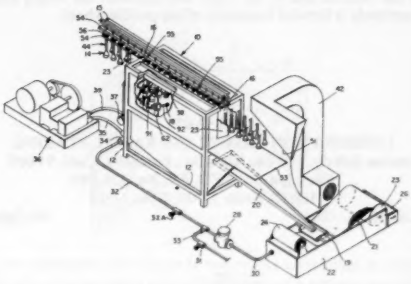
## HIGH PRESSURE WATER IMPACT SPRAYING SYSTEM FOR MAGNETIC CAN HANGERS

**George Wright, Willingboro, N.J., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.**

**Filed July 25, 1972, Ser. No. 275,083**

**Int. Cl. A47l** *5/38*

**U.S. Cl. 15—302** **4 Claims**



A means for automatically cleaning magnetic can hangers after they have been used to convey cans through a spray painting station. High pressure water without solvents is sprayed on the hangers from nozzles critically positioned with respect to the path of travel of the hangers through the cleaning station. The impact of the water spray as well as a follow-up application of high velocity air remove the paint deposits. A special covering for the hangers facilitates the paint removal and does not interfere with production runs as the hangers are conveyed through the cleaning station in essentially the same manner as through the painting station. The spray cleaning system utilizes a recirculation system and filtering system which aid the cleaning system in effectively reducing pollution in comparison with prior cleaning methods.

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**3,837,038**

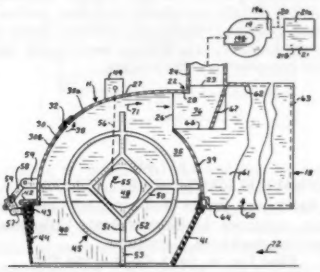
## APPARATUS FOR CLEANING SURFACES

**Paul W. Kimzey, St. Louis Park; Donald L. Olson, Minnetonka; Daniel A. Delmore, Hopkins, and Keith N. Krier, Minneapolis, all of Minn., assignors to Tennant Company, Minneapolis, Minn.**

**Filed Dec. 19, 1972, Ser. No. 316,476**

**Int. Cl. A47l** *5/30*

**U.S. Cl. 15—349** **12 Claims**



A cleaning machine that includes a mobile vehicle with a pick up assembly on the vehicle frame, said pick up assembly having a power driven paddle wheel mounted in a housing to extend closely adjacent the surface to be cleaned, the housing including dependingly mounted leaf flap mechanism, a duct

having an inlet for receiving raised material from the housing, an airstream outlet, and at a lower elevation than the airstream outlet, a heavy debris outlet opening to a heavy trash receptacle on the frame, a combination filter and light debris container, and a suction blower having an inlet fluidly connected to the duct airstream outlet and an outlet fluidly connected to the light debris container. In one embodiment the heavy trash receptacle is mounted rearwardly of the paddle wheel relative the normal forward direction of movement of the vehicle and in the other embodiment the heavy trash receptacle is located forwardly of the paddle wheel.

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**3,837,039**

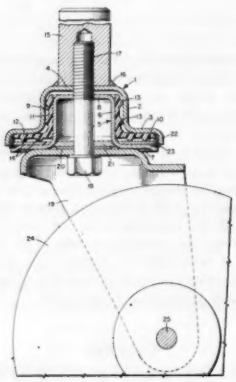
**COMBINATION THRUST AND RADIAL BEARING**

**Houston Rehrig, 100 Los Altos Dr., Pasadena, Calif. 91105**

**Filed Jan. 26, 1973, Ser. No. 326,895**

**Int. Cl. B60b** *33/00*; **F16c** *17/10*

**U.S. Cl. 16—20** **10 Claims**



A combination thrust and radial bearing including inner and outer housing members. Each housing member includes a longitudinally extending portion and a radially outwardly extending portion. A bearing insert made from synthetic resin is positioned between the housing members and includes a longitudinally extending portion having radially extending ribs thereon, and a radially outwardly extending portion having longitudinally extending ribs thereon. The ribs reduce the contact area, and therefore, the friction between the insert and the adjacent components of the bearing.

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**3,837,040**

**MECHANISM FOR LIMITING DEFLECTION OF A DOOR**

**Manfred Keller, and Jochen Hoffmann, both of Sindelfingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany**

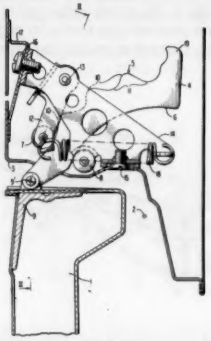
**Filed Jan. 26, 1972, Ser. No. 220,777**

**Claims priority, application Germany, Jan. 30, 1971, 2104456**

**Int. Cl. E05f** *5/06*

**U.S. Cl. 16—85** **24 Claims**

A mechanism for limiting the outward swinging movement of a door, especially of the door of a passenger motor vehicle, which is secured by hinges at a fixed part of the vehicle; a spring held roller is arranged on the inside of the door to which is coordinated a curved plate-like cam member secured at the fixed part and including a running surface provided with one or several detents for the roller to hold the door in one or several open positions.



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**3,837,041**

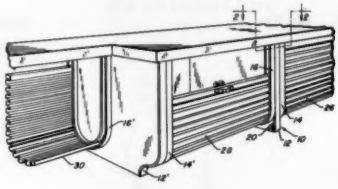
**COMBINATION CABINET EDGE TRIM STRIP AND CURVED GUIDE TRACK FOR TAMBOUR DOOR AND METHOD OF FORMING SAME**

**E. Lamar Modert, Greendale, and Paul G. Stier, Muskego, both of Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Nov. 24, 1972, Ser. No. 309,536**

**Int. Cl. A47f** *3/00*

**U.S. Cl. 16—94 R** **5 Claims**

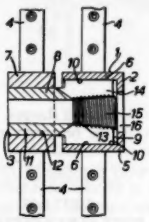


One piece extruded plastic trim and track member includes a pair of elongated back to back U-shaped channels which are spaced apart from each other by a trim portion which is in a plane common to the forward side wall of each channel. The member includes a pair of elongated V-grooves which separate the front surface of the member into three parallel strip portions. The member is adapted to be mounted on the front edge of a cabinet wall with the trim portion following the front edge of the wall to its lower extremity. The channel portions are adapted to be separated from the trim portion along a portion of their length by being slit along said V-grooves. The separated channel portions may be heated after they are slit and bent into a curved shape so that when the trim portion is applied to a vertical cabinet wall edge the curved channel portions will engage the side surfaces of the cabinet wall and form guide tracks for tambour doors located on each side of the cabinet wall. Where a guide track is only to be provided on one side of a cabinet wall, the unused channel portion may be cut away completely from the trim portion and used as a guide channel per se where no trim function is desired.

3,837,042
**PIVOTS**

William Paul White, Ellesboro Port, England, assignor to United Kingdom Atomic Authority, London, England

Continuation of Ser. No. 124,263, Mar. 15, 1971, abandoned.
This application Mar. 16, 1973, Ser. No. 342,790
Claims priority, application Great Britain, Mar. 26, 1970, 14941/70
Int. Cl. E05d 11/08
U.S. Cl. 16—140 10 Claims



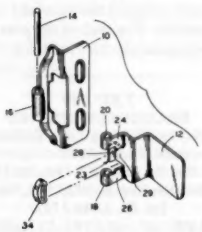
A window or door pivot in which a first bearing member has a bearing surface which is in frictional engagement with a bearing surface of a second bearing member, the bearing surfaces being of materials between which the static friction is low and is similar to the dynamic friction, means being provided for generating and maintaining a high interfacial pressure between the bearing members.

Suitable materials for the bearing surfaces are for example chromium plating, brass or stainless steel for one of the bearing surfaces and an acetal polymer for the other of the bearing surface.

3,837,043
**INTEGRAL SPRING AND CAM UNIT**

William H. Coe, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Apr. 17, 1973, Ser. No. 352,069
Int. Cl. E05f 1/12
U.S. Cl. 16—180 15 Claims

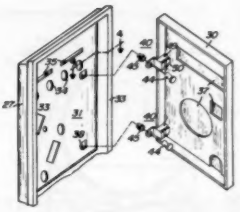


An improved spring construction for a self-closing hinge is comprised of a unitary elastic member positioned intermediate a cam surface associated with one leaf of the hinge and a pocket for holding the spring mechanism in the opposite leaf.

3,837,044
**DOOR HINGE**

Frederick J. Goetz, Jr., Arlington Heights, and Edward R. Kalenda, Franklin Park, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 14, 1971, Ser. No. 189,274
Int. Cl. E05f 1/12; F05d 7/12
U.S. Cl. 16—184 4 Claims

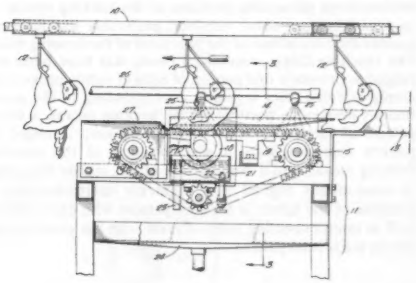


An elongated door hinge is removably connected to either one of a door member and a door frame of a support member and one end portion of the hinge includes a depending spring-like blade member which works against a protuberant member on one of the door member and the door frame to provide a bias to said door hinge whereby the door hinge imparts a snap-action movement to said door member to either its open end or closed position with respect to said door frame and thereafter is effective to retain the door member in such position.

3,837,045
**PROCESS AND APPARATUS FOR EVISCERATING POULTRY**

Harold F. Blacker, Fremont, assignor to Campbell Soup Company, Camden, N.J.

Filed Jan. 17, 1973, Ser. No. 324,330
Int. Cl. A22b 3/08
U.S. Cl. 17—11 7 Claims



Evisceration of poultry is accomplished by making two closely spaced parallel cuts through the back of the poultry carcass extending from the vent opening at the tail end of the carcass to a point adjacent the neck. The cuts are made at opposite sides of the backbone completely through the ribs and the viscera is grasped at the vent opening and pulled through the back cut toward the neck. The apparatus for accomplishing this includes a toothed conveyor which engages the carcass along its backbone and draws the carcass in a lengthwise direction across a pair of closely spaced continuously rotating cutters. A hold down bar is provided to force the carcass against the toothed conveyor and guide movement of the carcass during the cutting operation.

**3,837,046**

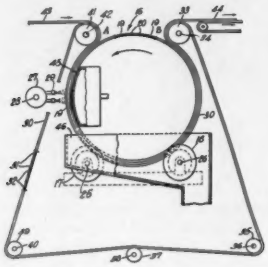
## METHOD (CLOSED SANDWICH WITH LARGE APERTURE FORMING MEANS AND PERFORATED BACKING MEANS)

**Frank Kalwaites, Gladstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.**

**Continuation-in-part of Ser. No. 22,321, March 24, 1970, abandoned. This application Feb. 10, 1972, Ser. No. 225,332**

**Int. Cl. D04h** *11/00*

**U.S. Cl. 19—161 P** **2 Claims**



A method and apparatus utilizing fluid rearranging forces to produce, from a layer of fibrous material such as a fibrous web, nonwoven fabrics that contain apertures or holes, or other areas of low fiber density, and have a plurality of patterns of groups of fiber segments that alternate and extend throughout the fabric. One form of the method includes the steps of positioning the starting web between an apertured forming means and a backing means that has continuous imperforate portions that lie between and interconnect discontinuous permeable portions, then directing fluid rearranging forces through the apertures of the forming means against the fibers of the starting web, causing some of the fluid streams to strike the continuous imperforate portions of the backing means and all of the fluid streams ultimately to pass through the permeable portions of the backing means. Each of the discontinuous permeable portions of the backing means has an area less than about one-half, preferably less than one-quarter the area of one of the apertures of the forming means. The resulting fabric consists of fibers that have been rearranged to provide a first pattern of nubs of tightly packed, randomly oriented fiber segments corresponding to the discontinuous permeable portions of the backing means, a second pattern of yarn-like bundles of fiber segments arranged in a pattern complementary to the apertures of the apertured forming means, and a third pattern of flat, ribbon-like groups of substantially aligned fiber segments interconnecting the portions of the fabric in the first pattern with each other, as well as interconnecting some of them with the yarn-like bundles in the second pattern.

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**3,837,047**

## MOLDED PLASTIC BUNDLE TIE

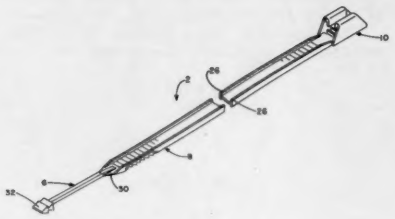
**Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.**

**Filed Nov. 26, 1973, Ser. No. 419,174**

**Int. Cl. B65d** *63/00*

**U.S. Cl. 24—16 PB** **5 Claims**

Molded plastic bundle tie device which can be produced in a straight action mold comprises a strap section and a U-shaped buckle on one end of a strap section. The sidewalls of the buckle have inwardly directed free ends which extend over the web and flanges extend from the free ends towards the web. The flanges have spaced apart opposed sides and teeth are molded on the portion of the web which lies beneath the



gap formed by the depending flanges. These teeth and other features permit the tie to be produced in a straight action mold.

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**3,837,048**

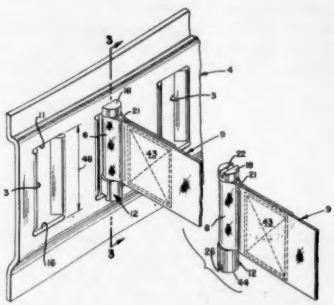
## POST STRAP FITTING

**Dean F. Lewis, 888 Las Trampas Rd., Lafayette, Calif. 94549, and Vearne D. Pinney, 763 Blossom Way, (Apt. 18), Hayward, Calif. 94541**

**Filed Mar. 26, 1973, Ser. No. 345,188**

**Int. Cl. A44b** *17/00*; **A44c** *5/18*

**U.S. Cl. 24—201 A** **3 Claims**



An end fitting for an adjustable strap having a post for receiving a loop of the strap, an end cap slidably mounted on the post and a spring biasing the post and cap longitudinally away from one another. The ends of the post and cap having a slot therein for engagement with a load rail.

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**3,837,049**

## BRASSIERE FASTENER

**Alfred G. Corrado, c/o Leading Lady Foundation, Inc., 3748 E. 91st St., Cleveland, Ohio 44105**

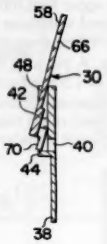
**Continuation of Ser. No. 192,613, Oct. 26, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,852**

**Int. Cl. A44b** *17/00*

**U.S. Cl. 24—201 CF** **7 Claims**

A two-piece, plastic separable fastener assembly is disclosed having particular utility as a fastener assembly for use with a nursing brassiere. The fastener assembly is comprised of a first plastic member having a slot and a second plastic fastener member having projection means thereon adapted to be introduced through the slot in a manner whereby the two members are releasably interengagable. The two members are provided with guide and positioning means cooperable to position

the projection relative to the slot to facilitate introducing the projection through the slot, whereby manipulation of the fastener assembly during interengagement of the two members is facilitated. One of the fastener members is attachable to a strap associated with the shoulder strap of a brassiere and the other fastener member is attachable to a strap associated with a movable cover portion of the brassiere cup.

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**3,837,050**

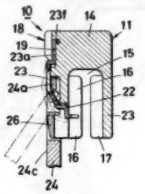
## AUTOMATIC LOCKING SLIDERS

**Ikuo Takamatsu, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed Dec. 26, 1973, Ser. No. 427,478**

**Int. Cl. A44b *19/30***

**U.S. Cl. 24—205.14 R** **1 Claim**




An automatic locking slider is disclosed for use with a slide fastener, which slider comprises a slider body, a pull tab and a locking spring. The locking spring is secured at one end in such a manner that it does not project outwardly beyond the outer surface of the slider body so as to avoid deformation of the spring when a slider-attached garment is laundered or pressed. The slider is constructed such that external forces are received collectively at the neck portion which is most rigid throughout the slider parts.

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**3,837,051**

## APPARATUS FOR SINGEING TEXTILE FABRICS

**Walter Osthoff, Ohligserstrasse 22, 56 Wuppertal 11; Rainer Ebbinghaus, Westtrasse 31, 405 Monchengladbach, and Otmar Hohenester, Neckarstrasse 10, 56 Wuppertal 1, all of Germany**

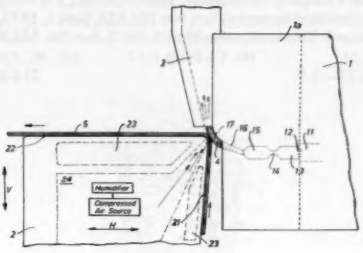
**Filed Mar. 12, 1973, Ser. No. 340,066**

**Claims priority, application Germany, Mar. 21, 1972, 2213631**

**Int. Cl. D06c *9/02***

**U.S. Cl. 26—3** **3 Claims**

Apparatus for singeing projecting threads from a web of flat fabric including a convex flame guiding body which is used in conjuction with a stream of compressed air, adapted to be enriched with moisture to limit the depth of penetration of the flame, the compressed air being directed on the side of the flat textile facing away from the flame, the guiding arrangement having guiding surfaces lying one behind the other in the direction of the web, and being inclined 90° in relation to each other.

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**3,837,052**

## METHOD OF DRAWING MOVING THREADS OR YARNS INTO NARROW CHANNELS AND APPARATUS THEREFOR

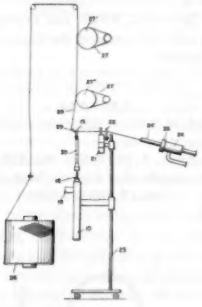
**Wolfgang Martin, Ludwigshafen; Ulrich Schwoerer, Muehlacker; Wolfgang Bauer, Heidelberg, and Dieter Staufer, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda Fabrik Aktiengesellschaft, Ludwigshofen/Rhine, Germany**

**Filed Dec. 20, 1972, Ser. No. 316,864**

**Claims priority, application Germany, Dec. 27, 1971, 2164802**

**Int. Cl. D02g *1/16***

**U.S. Cl. 28—1 R** **6 Claims**



A method of drawing moving threads or yarns, preferably carpet yarns, into narrow channels and particularly threading channels of texturizing apparatus, in which method the yarn is drawn into said channel at a velocity of from 200 to 3,500 m/min by means of a wire loop passing through said channel, and at the same time or shortly thereafter the said yarn is severed at a point between said wire loop and a suction pistol adapted to take up the moving thread before it is drawn into said channel. The invention also relates to apparatus for carrying out said method.

3,837,053

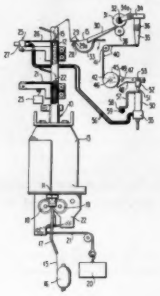
## YARN WINDING MECHANISM IN A STUFFER CRIMPER

Alexander L. Trifunovic, Wilmington, Del., and William H. Hills, Melbourne Village, Fla., assignors to Joseph Bancroft & Sons Company, Wilmington, Del.

Continuation-in-part of Ser. No. 222,553, Feb. 1, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 338,048

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.7 21 Claims



A yarn winding mechanism for removing the treated yarn from yarn treating apparatus such as stuffer crimpers and the like. The treated yarn is wound upon a spool into a yarn winding by means of a rotating driving roll engaging the peripheral surface of the winding. The winding is normally in engagement with the driving roll but is movable out of engagement to halt the winding operation. The yarn winding is mounted upon pivoted lever means, and movement to the disengaged position is accomplished by means of a cable attached at one end to the pivoted lever means and at the other end to a rotatable drum. A drum drive means operated by a fluid pressure motor selectively engagable withthe drum to rotate the drum through a predetermined arc, thus pulling the cable and disengaging the winding from the driving roll. The motor operates in response to means sensing the quantity of yarn in the exit portion of the treating chamber. A means for sensing a break in the yarn is also provided, which can disengage the winding from the driving roll and can stop the feeding of yarn into the yarn treating chamber.

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3,837,054

## NEEDLE PUNCHING MACHINE

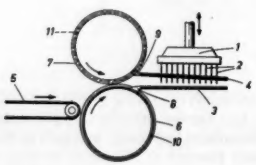
Ernst Fehrer, Linz, Austria

Filed Feb. 8, 1973, Ser. No. 330,504

Claims priority, application Austria, Mar. 6, 1972, 1833/72

Int. Cl. D04h *18/00*

U.S. Cl. 28—4 R 4 Claims



A pair of feed rolls are provided, which comprise a lower feed roll and an upper feed roll defining a nip with said lower feed roll. A lower perforated plate has one end adjacent to the upper portion of the periphery of said lower feed roll and is formed with a multiplicity of perforations. An upper perforated plate is disposed over said lower plate to define a space therewith and has one end adjacent to the lower portion of the periphery of said upper feed roll and is formed with perforations which are aligned with those in said lower plate. Said feed rolls are operable to feed a non-woven fiber web through said nip into said space. A plurality of blades are carried by and protrude like teeth of a comb from said one end of one of said plates toward the adjacent portion of the periphery of the adjacent one of said feed rolls. Said adjacent feed roll is formed in its periphery with annular grooves receiving said blades.

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3,837,055

## DEVICE FOR LEASING TWO ROWS OF YARN INTO A SINGLE HANK

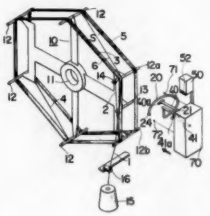
Eiji Yasumori, Chiba, and Naoichiro Tanno, Kyoto, both of Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto-shi, Kyoto-fu, Japan

Continuation-in-part of Ser. No. 828,979, May 29, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,645

Claims priority, application Japan, May 31, 1968, 43-37267; May 31, 1968, 43-45528

Int. Cl. B65h *54/56, 54/62*

U.S. Cl. 28—21 6 Claims



A device for leasing two rows of a yarn into a single hank having a circular hook adapted to circulate around the two rows of hank to form a "Figure 8" configuration of lacing thread around the hank. The device also simultaneously attaches a label to the hank with the aid of a label delivering means adapted to feed a label having a hole in such a manner as to locate the hole on the path of circulation of the circular hook to permit the latter to pass therethrough.

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3,837,056

## COTTON TREATING PROCESS

John L. Rendall; William Q. Rhyne, and Arthur Williams, all of Greenville, S.C., assignors to The Richen Co., Inc., Greenville, S.C.

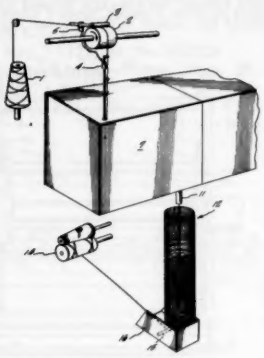
Filed Feb. 9, 1972, Ser. No. 224,765

Int. Cl. D02j *1/22*

U.S. Cl. 28—72 HR 9 Claims

A process is disclosed for the heat treatment of cotton yarn to improve its tensile strength and elongation. The yarn is

heated in the absence of substantial tension on the yarn to a temperature above its shrinkage temperature and permitted to



shrink without substantial yarn tension. The yarn is thereafter cooled to set the same.

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**3,837,057**

**METHOD FOR SECURING A PROJECTILE IN A SABOT**

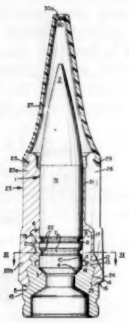
**Walter Engel, Dubendorf, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland**

**Filed Mar. 6, 1972, Ser. No. 231,867**

**Claims priority, application Switzerland, Mar. 29, 1971, 4557/71**

**Int. Cl. B21k** *21/06*

**U.S. Cl. 29—1.2** **3 Claims**



A sabot projectile comprising a projectile body having at least one peripheral groove and a sabot incorporating a sabot rear part having a substantially sleeve-shaped extension arranged at its front end. The extension is sub-divided into segments by means of substantially axially extending slots, and such segments possess radially inwardly directed projections or tabs which are pressed into such peripheral groove.

The method for attaching the projectile body to the sabot contemplates deforming the sleeve-shaped extension, and through such deformation pressing material from the sleeve-shaped extension into the peripheral groove of the projectile body, the displaced material of the sleeve-shaped extension forming tabs or projections which engage with the peripheral groove of the projectile body, to thereby attach the projectile body to the rear end of the sabot.

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**3,837,058**

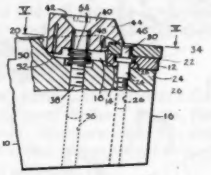
**TOOL HOLDER**

**George G. Barkley, New Alexandria; Edward L. Sorice, Crabtree, and Kenneth L. Niebauer, Greensburg, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.**

**Filed Nov. 15, 1973, Ser. No. 415,985**

**Int. Cl. B26d** *1/00*

**U.S. Cl. 29—96** **10 Claims**



A tool holder having a pocket for receiving an insert with a pin stationary in the holder and extending into the pocket while a clamp is adjustably mounted on the holder and engages the insert from the rear and the top and forces the insert against the pin while simultaneously clamping the insert firmly against the bottom of the pocket.

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**3,837,059**

**PROFILE MILLING CUTTER**

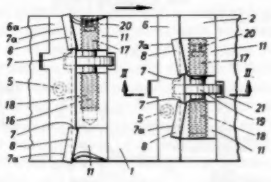
**Rudolf Pristavnik, Steyr, Austria, assignor to GFM Gesellschaft fur Fertigungstecknik und Maschinenbau Aktiengesellschaft, Steyr, Austria**

**Filed Dec. 28, 1973, Ser. No. 429,688**

**Claims priority, application Austria, Jan. 5, 1973, 113/73**

**Int. Cl. B26d** *1/12*

**U.S. Cl. 29—105 R** **1 Claim**



This invention relates to a profile milling cutter for cylindrical milling of crankpins or the like, consisting of a cutter body and a plurality of cermet cutter plates, which are arranged in pairs in respective peripherally open recesses formed in the cutter body and extending from one end thereof to the other and which are mounted on common support blocks, which determine the radial depth to which the cutter plates are inserted and bear on holders which form two bearing surfaces each, each pair of cutter plates being held in position by a pair of clamping wedges, each recess in the cutter body being prismatic and serving additionally as a guide for the clamping wedges associated with the pair of cutter plates, and a tightening screw, which is parallel to the axis of the cutter body and operate to tighten the clamping wedges.

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**3,837,060**

**ARMOR JOINT JACK**

**Norman P. Stehling, Box 18-A, Mason Rt., Fredericksburg, Tex. 78624**

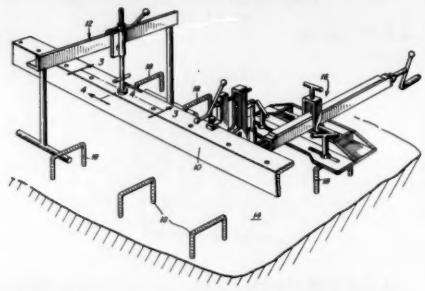
**Filed Oct. 31, 1972, Ser. No. 302,497**

**Int. Cl. B23q** *3/18;* **E01d** *19/02*

**U.S. Cl. 29—200 P** **13 Claims**

Apparatus for positioning armor joints in highway bridge construction has a plurality of stands for suspending an armor joint at a proper grade, or height, above a bridge deck or floor.

A clamp device engages an armor joint suspended from the stands and locates the joint on the line of the bridge. The locating clamp device includes a line-up bar having a frame member provided with an opening in a one end, a tube slidingly engaging and encircling the frame member and provided with a further opening, and a bar engaged in the further opening for varying the relative positions of the frame member and tube. A hollow sleeve is mounted to an end of the frame member spaced from the one end. The line-up bar moves a clamp head pivotally connected to a yoke which is in turn connected to an end of a bar slidably arranged in the sleeve.



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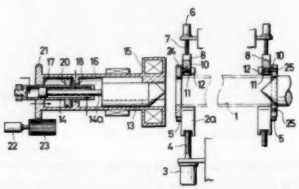
**3,837,061**

**APPARATUS FOR POSITIONING A FLANGE**

**Kiyoshi Hirose; Kaoru Shiozawa, both of Chibaken, and Yuzi Saito, Kanagawaken, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan**

**Filed May 24, 1973, Ser. No. 363,528**
**Claims priority, application Japan, May 31, 1972, 47/54722**
**Int. Cl. B23p *19/00***
**U.S. Cl. 29—200 P** **1 Claim**



Apparatus for positioning a bolt hole of a flange to be welded to one end of a pipe relatively to another flange at the other end of the pipe comprising means for supporting and rotating the flange, a pin adapted to be inserted into one of the bolt holes of the flange, means for detecting the inserted pin in rotation of the flange, and means for stopping the rotation of the flange in response to said detecting of pin insertion, and the flange being further rotated an angle if necessary

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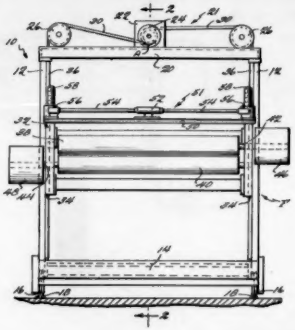
**3,837,062**

**MACHINE FOR DISMANTLING TUBE BUNDLES**

**Gene E. Ohmstede, Beaumont, Tex., assignor to Ohmstede Machine Works, Inc., Beaumont, Tex.**

**Division of Ser. No. 260,443, June 7, 1972, Pat. No. 3,785,026.**
**This application May 31, 1973, Ser. No. 365,560**
**Int. Cl. B23p *19/00***
**U.S. Cl. 29—200 D** **5 Claims**

This invention is related to an improved machine for dismantling tube bundles in a manner more efficient than has heretofore been known in the prior art. The tube dismantling machine is capable of effectively removing a plurality of tubes at a single time. The improvement is directed towards locating a tube bundle end that has been cut-off to remove a tube sheet, adjacent and in operative relation to a pair of cooperating parallel rollers. An operator is used to feed successive tubes toward the rollers until they are frictionally engaged thereby. The rollers are rotated in a direction to continue the movement of the tubes from the bundle. After a particular row of tubes has been removed, the rollers are remotely controlled so as to move in a plane perpendicular to the axes of the tubes, and thereby position the rollers in operative relation with another row of tubes to be removed.



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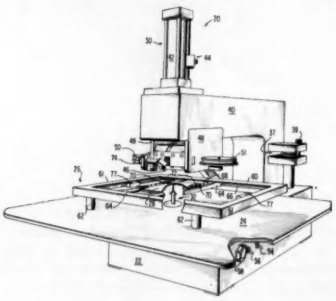
**3,837,063**

**POST TERMINAL INSERTION APPARATUS**

**Robert Charles Wright, 02, Huntingdon Valley, Pa., assignor to Elco Corporation, Willow Grove, Pa.**

**Filed June 8, 1973, Ser. No. 368,448**
**Int. Cl. H05k *13/04***
**U.S. Cl. 29—203 P** **20 Claims**



Apparatus for direct insertion into a substrate of terminals from a flexible carrier strip releasably supporting the terminals. The strip path of travel toward a terminal removal zone and from that zone is constrained to accomodate strip flexibility and travel without binding while preventing significant strip twisting and transverse and lateral excursion. A guide block assembly establishes that path of travel in first and second channel guide sections where the terminals and deflected strip portions are respectively guided by flanges. During terminal removal, resilient jaws aid in providing uniform deflection of these strip portions. Continuous tension tends to advance the strip, and escapement fingers control strip indexing. A ram assembly, operable after indexing to directly insert the terminal, includes selected gripping inserts cooperable with differently sized terminals. An anvil assembly cooperates with a sensor and an indicator to insure correct substrate orientation relative to the ram assembly.

3,837,064

## METHOD AND A DEVICE FOR INTRODUCING INNER TUBES INTO PNEUMATIC TYRES

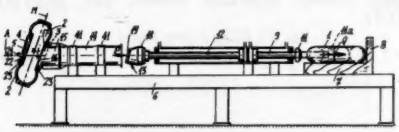
Bernard Alfred Georges Membre, Maubeuge, and Daniel Eugene Joseph Modeste Clairet, Rousies, both of France, assignors to Boussois S.A., Paris, France

Filed May 7, 1973, Ser. No. 357,720

Claims priority, application France, May 25, 1972, 72.18648; Mar. 22, 1973, 73.10274

Int. Cl. B23p *19/02*, *11/02*

U.S. Cl. 29—235 15 Claims



A method and device for introducing inner tubes which are inflated to a predetermined pressure into tyres, and especially inner tubes of the so-called "puncture-proof" type.

The inner tube is deformed so that the two opposite faces of its inner wall are substantially in contact and is then introduced into an ovalized guide tube terminating in a funnel having an obliquely oriented circular orifice. The orifice is introduced into the opening of the tyre and the inner tube is thrust into the tyre by the ram of a jack. The inner tube is prevented from escaping by virtue of a deflector which is placed in the opposite opening of the tyre.

3,837,065

## METHOD OF SEMI-AUTOMATIC ENCAPSULATION AND A SEMI-AUTOMATIC ENCAPSULATING APPARATUS

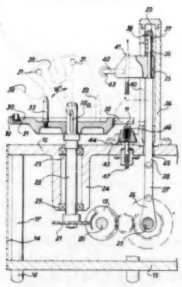
Lucien Abbe, Issy Les Moultneaux; Jean Michel Eschbach, Enghten Les Bains; Roland Letang, Chennevieres sur Marne, and Charles Sachs, Paris, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 31, 1972, Ser. No. 302,491

Claims priority, application France, Nov. 18, 1971, 71.41286

Int. Cl. B23p *11/00*, *19/00*

U.S. Cl. 29—429 10 Claims



A first circular turntable is provided with recesses for accommodating ten vessels to be encapsulated and with peripheral slots, the slots and recesses being uniformly spaced in alternate sequence. A slide containing a pellet-loading magazine is placed beneath the edge of the turntable in vertical alignment with a sucking tube carried by a supporting-arm which is driven in reciprocating motion.

The sucking tube is moved downwards to its bottom position and draws a pellet upwards from the magazine through a slot. At the same time, the turntable is caused to rotate through an angular interval of 18°, the tube returns downwards the suction is cut-off and the pellet drops into the corresponding vessel.

After one complete revolution, a second turntable provided with holes in which are placed ten deflecting spacer screens is placed on the first turntable and locked in position. By rotating an annular diaphragm having corresponding holes, the ten screens are released and fall into the ten vessels of the first turntable, said vessels being finally sealed by end-caps.

3,837,066

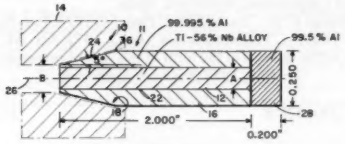
## METHOD OF EXTRUDING ALUMINUM COATED NB-TI

Masahiro Mori, Allentown; Walter C. Hahn, Pleasant Valley, and Betzalel Avitzur, Allentown, all of Pa., assignors to The United States of America as represented by the Atomic Energy Commission, Washington, D.C.

Filed Feb. 14, 1973, Ser. No. 332,441

Int. Cl. H01v *11/00*; B21c *23/22*

U.S. Cl. 29—599 4 Claims




ASSEMBLED BILLET CONFIGURATION

This invention provides a billet and a method for shaping the same for the production of composite superconductor wire composed of at least one high yield strength superconductor core surrounded by a low yield strength matrix material that is uniformly clad on and around and bonded to the core for use in magnets and the like. In one actual billet, which has a core to sleeve yield strength ratio of about 7–1, the billet has a core-to-sleeve diameter ratio of between about 0.4 and 0.9 and a nose cone semi-angle of 5° for extrusion through a die semi-angle of 5° for area reductions of 39 to 65 percent. This billet comprises an aluminum clad niobium-titanium core with ratios of core area to sleeve area ranging from 27.5 to 100.2 percent. The billet according to the method of this invention, is extruded without fabrication damage and/or annealing to produce a uniform bond between the superconductor core and the matrix.

3,837,067

## METHOD OF MAKING INTEGRATED CIRCUIT PACKAGE

Samuel A. Johnston, Fontana; John G. Lyons, Jamesville, and Henry J. Riedmayer, Fort Atkinson, all of Wis., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

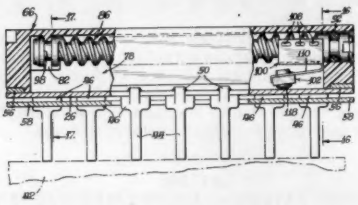
Division of Ser. No. 211,655, Dec. 23, 1971, Pat. No. 3,784,948. This application Feb. 20, 1973, Ser. No. 333,562

Int. Cl. H01c *1/02*, *11/00*

U.S. Cl. 29—613 7 Claims

An integrated circuit-type package including a ceramic substrate having conductive and resistive paths, including both variable and fixed resistances, a pair of terminal strips each having a plurality of terminal elements being secured to the substrate on opposite sides thereof by clinching and soldering in electrical engagement with respective ones of the paths and forming a unitary, rigid and mechanically strong assembly with in-line pin elements. Flat bonding elements are applied to

opposite surfaces of the substrate enclosing the clinching elements. A case having a hollow interior containing a lead screw



and a contact carrier is adhered to the substrate by the application of heat and pressure, which also cause the bonding members to flow around and embed the clinching elements.

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**3,837,068**

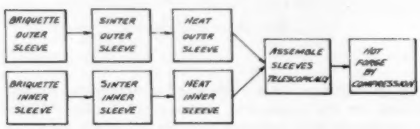
## METHOD OF MAKING A COMPOSITE HIGH-STRENGTH SLEEVE

**William M. Dunn, Farmington, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.**

**Division of Ser. No. 152,862, June 14, 1971, Pat. No. 3,762,881. This application Aug. 3, 1972, Ser. No. 277,820The portion of the term of this patent subsequent to May 30, 1989, has been disclaimed.**

**Int. Cl. B22f *3/24***

**U.S. Cl. 29—420.5** **2 Claims**




A composite high-strength machine element such as a sleeve (FIG. 6) consists of a heavy load bearing or working portion composed of sintered powdered high-performance alloy and a supporting portion which undergoes less concentrated or intense loads is made of a base metal such as sintered powdered iron. Where the outer portion of the sleeve is the heavy load bearing portion (FIG. 1) and the inner sleeve is the lower-stressed portion (FIG. 2) the outer portion is provided with an internal taper while the inner portion is provided with a matching external taper. The two portions are separately formed from powdered metal by suitable dies in standard briquetting presses and are then sintered at temperatures from 2,100° to 2,150° F. (FIG. 5). After sintering, the two portions are maintained at or brought up to forging temperatures from 1,500° to 2,100° F. and forged by forcing them together in a hot-forging press (FIG. 3), thereby producing the composite high-strength machine element shown in FIG. 4, with the outer and inner portions firmly and inseparably forged and into union with one another. The densities of the two powdered metal components are converted, from approximately 75 percent after briquetting, to 98 percent or more after being united by the hot-forging operation. Photomicrographs of sections of such composite machine elements (FIG. 7), after subsequent carburizing and hardening heat treatment, show an excellent interlock resulting from a migration of the metals into one another at the tapered joint. Torsion tests (FIGS. 8 and 9) performed on test specimens cut longitudinally from these composite machine elements at the tapered joint between the two forged components show adequate strengths without failure along the junction surfaces. These strengths compare favorable with the strengths of similar single solid metal specimens.

A modification (FIG. 6) differs from the foregoing form of the invention by employing slightly different converging tapers in the outer and inner components otherwise follows the same procedure set forth above, resulting in a similarly excellent interlock by migration of the metals at the interface, as also shown by photomicrographs (FIG. 10).

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**3,837,069**

## METHOD OF SECURING FITTINGS OR PLATES ONTO CONTAINERS OR CONTAINER PORTIONS AND A MACHINE FOR CARRYING OUT THE METHOD

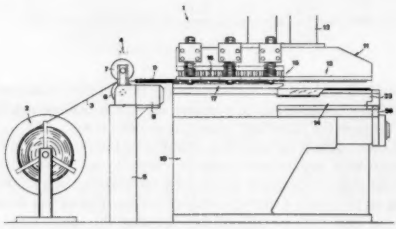
**Hans Elov Nordgren, P1 4322, S-828 00, Edsbyn, Sweden**

**Filed Nov. 1, 1972, Ser. No. 302,778**

**Claims priority, application Sweden, Nov. 12, 1971, 14493/71**

**Int. Cl. B23p *11/00, 19/04***

**U.S. Cl. 29—432.1** **30 Claims**



A method and machine for applying securing fittings or plates onto container and container components wherein the plates are formed from a continuous strip of stock by first stamping the strip with the necessary securing tabs, severing the completed fittings or plates from the strip and immediately thereafter directly applying the fittings or plates to the container or container components.

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**3,837,070**

## AUTOMATIC TOOL CHANGE APPARATUS

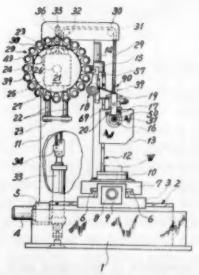
**Yoshiki Ochiai, Okazaki, and Kazuhiro Sakane, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan**

**Filed Oct. 6, 1972, Ser. No. 295,738**

**Claims priority, application Japan, Oct. 6, 1971, 46-78582**

**Int. Cl. B23q *3/157***

**U.S. Cl. 29—568** **7 Claims**



An automatic tool change apparatus is provided for a numerically controlled machine tool including a tool holder stored in a tool magazine and being transferable together with a tool sleeve which prevents dust in the atmosphere from becoming attached to the shank portion thereof, so as to as-

sure a snug engagement between the tool holder and a tool spindle, and therefore to obtain a high degree of machining accuracy. The tool sleeve is loaded onto the tool magazine by a sub-transfer arm by moving the same radially of the tool magazine, and then axially of the tool sleeve.

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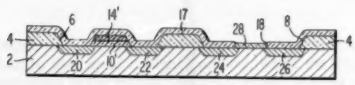
**3,837,071**
**METHOD OF SIMULTANEOUSLY MAKING A SIGFET AND A MOSFET**

**Ram Shaul Ronen, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.**

**Filed Jan. 16, 1973, Ser. No. 324,180**
**Int. Cl. B01j** *17/00*
**U.S. Cl. 29—571** **8 Claims**




A method comprising providing a gate electrode layer of polycrystalline silicon for a SIGFET, depositing a layer of silicon dioxide doped with an impurity of opposite conductivity type on the gate electrode layer and on the surface of the single crystal layer except where the channel of a MOSFET is to be located, diffusing dopant from the doped oxide layer into the gate electrode layer, and into the single crystal layer to form source and drain regions of the transistors, depositing a layer of gate insulating material on the channel region of the MOSFET, and depositing metal on the source and drain regions and on the gates of both transistors.

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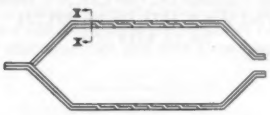
**3,837,072**
**METHOD OF MANUFACTURING A COHERENT ROEBEL BAR COIL**

**Lennart Moberg, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Nov. 21, 1973, Ser. No. 417,973**
**Claims priority, application Sweden, Dec. 8, 1972, 16005/72**
**Int. Cl. H02k** *15/00*
**U.S. Cl. 29—596** **1 Claim**

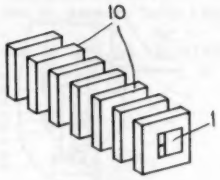


A one-turn stator coil for arrangement in winding slots of a rotary a.c. machine, in which the coil sides are made in the form of roebel bars, is produced by forming two hair-pin shaped bundles of strand loops, with the strand loop ends in each bundle having different radii of curvature, displacing the strand loop ends of each bundle longitudinally, with the loop end of smallest radius of curvature in one bundle facing the other strand loop ends in that bundle with its convex surface, and with the smallest strand loop end in the other bundle facing in the direction of the loop ends of the bundle with its concave surface, bending both bundles at the same distance from the nearest strand loop end to form sidewise-bent portions in all the strand loops, pushing together the curved strand loop ends of both bundles in the longitudinal direction to their original position, transposing the strands in each of the bundles successively to form a roebel bar strand disc, interfitting the two roebel bar strand discs and spreading the shanks of the resulting hairpin-shaped body to form a coil.

**3,837,073**
**METHODS OF MANUFACTURING MAGNETIC TRANSDUCING HEADS**

**Derek Frank Case, Sunbury-on-Thames, England, assignor to International Computers Limited, London, England**

**Filed June 5, 1973, Ser. No. 367,303**
**Claims priority, application Great Britain, June 6, 1972, 26230/72**
**Int. Cl. G11b** *5/42*
**U.S. Cl. 29—603** **8 Claims**




A method of manufacturing a component of a magnetic transducing head is disclosed in which ferrite strips are spaced apart by a non-magnetic gap and are then surrounded by a non-magnetic material. The resulting structure is divided into slices each of which contains a pair of ferrite portions with a predetermined gap between them. The slice may be profiled on one face for co-operation with a record disc and a yoke secured to the other face to complete the magnetic circuit.

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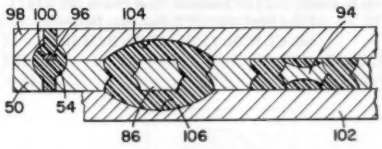
**3,837,074**
**COAXIAL INTERCONNECTIONS**

**William Griff, Tarzana, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.**

**Continuation of Ser. No. 753,263, Aug. 16, 1968, abandoned.**
**This application July 8, 1970, Ser. No. 56,159**
**Int. Cl. H01b** *13/00*; **H05k** *3/00*
**U.S. Cl. 29—624** **3 Claims**




A structure and fabrication method therefor for supporting and interconnecting electrical circuit components. The structure defines electrically conductive paths between and electrically isolated from conductive planar members by embedment in an elastomeric dielectric comprising a preblended mixture of a thermosetting resin such as an epoxy and not more than 20 percent by weight of a thermoplastic resin such as a polyamide. The structure is fabricated by removing material from a conductive planar member to form a recess extending into said planar member, placing a sheet of said dielectric adjacent the recessed surface and filling said recess with said dielectric by applying heat and pressure to said sheet.

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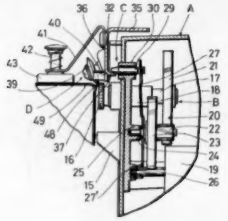
**3,837,075**
**MOTOR OPERATED CAN OPENER**

**Osamu Yamamoto, Nagoya, Japan, assignor to Kabushikikaisha Aichidenkikasakusho, Kasugia-shi, Aichi-ken, Japan**

**Filed May 21, 1973, Ser. No. 362,224**
**Int. Cl. B67b** *7/38*
**U.S. Cl. 30—4 R** **6 Claims**

A reduction gearing relating an electric motor for driving a feed wheel and a driving shaft carrying the feed wheel includes

helical gears at least one of which is adapted to be displaced axially by the thrusting force resulting from the reaction force of the can opening operation. This thrusting helical gear is either mounted tightly on a thrusting shaft for movement of the gear with the shaft or alternatively, the helical gear may be mounted loosely for thrusting movement on a shaft adapted not to thrust. A resilient interconnecting member is actuated




by the thrusting movement of the helical gear and makes a latching piece engage a pivoted hand lever carrying a rotary cutter, thereby maintaining the hand lever in the lowered or can severing position. The disappearance of the reaction force results in the disengagement between the hand lever and the latching piece and the displaced helical gear is returned by the restoring force of the resilient interconnecting member.

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**3,837,076**

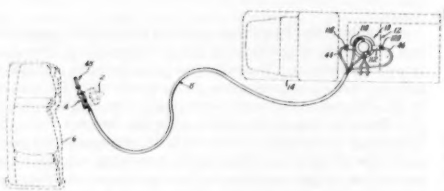
## POWER OPERATED PORTABLE SHEAR DEVICE

**Lewis B. Good, Jr., 145 Johnson, East Peoria, Ill. 61611**

**Filed Sept. 14, 1972, Ser. No. 289,115**

**Int. Cl. B26b** *15/00, 17/00;* **B25f** *3/00*

**U.S. Cl. 30—180** **15 Claims**



A portable cutter unit is operated by fluid pressure from a pump, such as the water pump on a fire engine. An intensifier unit is connected between the pump and the cutter unit, and functions to generate relatively high operating fluid pressure from the relatively low fluid pressure produced by the pump to operate the cutter unit, the intensifier unit including a pilot valve operable from the portable cutter unit. The cutter unit includes interchangeable scissors-type and anvil and blade-type heads, for use in cutting light and heavier materials, respectively.

**3,837,077**

## SHEARS FOR CUTTING A FILLING THREAD IN A WEAVING MACHINE

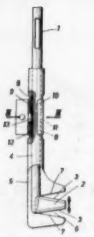
**Claus Filter, Rethem, Aller, Germany, assignor to Vereinigte Osterreichische Eisenund Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Etablissement Wanderfield, Schaan, Liechtenstein**

**Filed Sept. 7, 1973, Ser. No. 395,299**

**Claims priority, application Austria, Sept. 18, 1972, 7969/72**

**Int. Cl. B26d** *1/02*

**U.S. Cl. 30—231** **2 Claims**



A stationary carrier is formed with a mouth defined by two spaced apart stationary cutting edges. The carrier has a sleevelike portion. A circular cylindrical rod has an angled end portion which constitutes a shear blade extending between said stationary cutting edges and having two cutting edges which are disposed on opposite sides of said blade and face respective ones of said stationary cutting edges. The rod is formed with a flat and extends in and is guided by said sleevelike portion and is reciprocable to cause said cutting edges of said blade to cooperate with said stationary cutting edges. A stationary leaf spring bears on said flat and tends to hold said rod in such an angular position that said blade crosses said stationary cutting edges.

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**3,837,078**

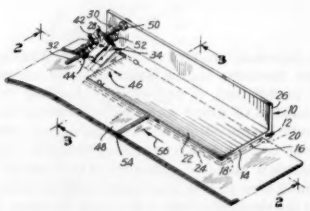
## WALLPAPER TRIMMER

**Adolf Weppner, 5 Arcadia Dr., New City, N.Y. 10956**

**Filed Mar. 9, 1973, Ser. No. 339,731**

**Int. Cl. B26b** *3/08*

**U.S. Cl. 30—293** **1 Claim**



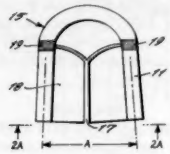

A wallpaper trimmer is disclosed as including a wallpaper slot and a blade holder disposed relative to the slot such that an inserted blade will trim the edge of untrimmed wallpaper thus replacing the presently used hand trimming and straight edge operation.

3,837,079

## EXPANDABLE DENTURES

Vincent J. Cecero, 481 Richmond Ave., Staten Island, N.Y. 10302

Filed Nov. 6, 1973, Ser. No. 413,343
Int. Cl. A61c 13/00
U.S. Cl. 32—2 1 Claim



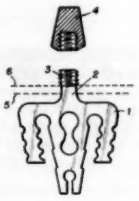

An improved set of upper and lower dentures which are expandable, so that upon a slight pressure, when the dentures are compressed in the mouth, there is a greater holding power for retaining the dentures properly in place.

3,837,080

## ARTIFICIAL ALLOPLASTIC ROOTS, FOR SUPPORTING AND RETAINING DENTURES

Ugo Pasqualini, Via Borgonuova 26, Milan, Italy

Filed June 13, 1973, Ser. No. 369,764
Int. Cl. A61c 13/00
U.S. Cl. 32—10 3 Claims




An improved alloplastic root comprising an endo-osteal portion and a very short tail having a threaded free end and comprising too a stump formed with a threaded blind hole which can be screwed onto said threaded end.

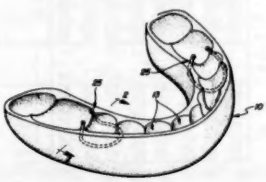
The stump, extending into the mouth cavity, is screwed onto said threaded end only after having implanted the endo-osteal portion of alloplastic root and after a complete ossification thereof.

3,837,081

## PREFORMED TOOTH POSITIONING AND RETAINING APPLIANCE

Peter C. Kesling, Geen Acres, La Porte, Ind. 46350

Filed July 2, 1973, Ser. No. 375,343
Int. Cl. A61c 7/00
U.S. Cl. 32—14 B 5 Claims




A tooth positioning and retaining appliance which is preformed and includes a molded arch-shaped body of resilient material having upper and lower archways to receive upper and lower arches of a person. Each archway includes a plurality of tooth sockets arranged in ideal arch relationship and preselected positions to urge the teeth received thereby into the preselected positions. Retention means in the form of relatively rigid projections are anchored in at least one of the arches for engagement in the embrasure or interproximal areas of the teeth to assist in orienting and retaining the appliance in position.

3,837,082

## DE IMPACTOR DEVICE

Horace E. Pool, 406 W. 26th St., North Little Rock, Ark. 72114

Filed Aug. 13, 1973, Ser. No. 387,652
Int. Cl. A61c 7/00
U.S. Cl. 32—64 9 Claims

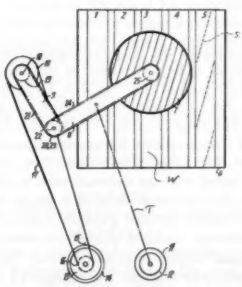
Spring wire devices inserted between maxillary and mandibular molars for separating impacted molars by crimping an activating loop portion of the device projecting at an angle to separating arms inserted between the teeth. The separating arms are interconnected with the activating loop by deflector formations adapted to bridge the space between the teeth and retain the device in place until removed.

3,837,083

## CHRONOCOMPARATOR DIAGRAM READER

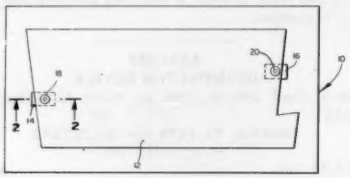
Jean-Pierre Bonny, La Chaux de Fonds, Switzerland, assignor to Portescap, La Chaux de Fonds, Switzerland

Claims priority, application Switzerland, June 16, 1971, 8767/71
Filed June 14, 1972, Ser. No. 262,610
Int. Cl. G06g 9/00, 11/00
U.S. Cl. 33—1 C 7 Claims




A device for reading chromocomparator diagrams recorded on a base web in a plurality of parallel strips has first and second pivotally interconnected arms, with the first arm pivotally mounted for rotation about a fixed pivot point, and a reticulated transparent reading disk rotatably mounted on the second arm. A transmission system of cables and pulleys operatively interconnect a control knob with the reticulated disk to permit angular adjustment of the disk with respect to a diagram positioned adjacent the disk, independently of the position of the first and second mounting arms.

**3,837,084**
**PATTERN ADJUSTMENT**
**Betty Johnson, 1928 Annin St., Philadelphia, Pa. 19145**
**Filed Mar. 2, 1973, Ser. No. 337,529**
**Int. Cl. A41h** *43/00*
**U.S. Cl. 33—17 R** **1 Claim**



A ferrous metal weight and a magnetic plate are placed on opposite sides of a thin sheet of paper, forming a pattern. They are juxtaposed so that they are attracted to one another and grip the pattern. When laid out upon a cloth, the weight and plate position the pattern with respect to the cloth to be cut. A plurality of such weights and plates are used to hold the pattern in position.

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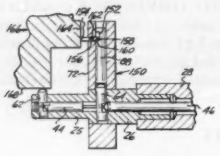
**3,837,085**
**RANGE-EXTENSION DEVICE FOR DOUBLE-PROBE HOLE-LOCATION AND CONCENTRICITY GAUGE**
**Garf L. Dunn, Farmington, Mich., assignor to Zero Gage Company, Detroit, Mich.**
**Filed Dec. 13, 1971, Ser. No. 207,330**
**Int. Cl. G01b** *5/00, 5/24*
**U.S. Cl. 33—174 Q** **1 Claim**



This device extends the range of measurement to bores or surfaces incapable of being reached or measured by the gauge disclosed and claimed in U.S. Pat. No. 3,732,624, issued May 15, 1973 on the co-pending application of Andrew Eisele, Ser. No. 191,041, filed Oct. 20, 1971 for Double-Probe Hole-Location and Concentricity-Measuring Spindle for Dial Indicator Gauge. The latter, briefly described, consists of a hollow shaft or barrel with an external pilot surface adapted to be fitted into the reference bore of a gauge-holding fixture, and with two axially-spaced parallel transverse bores containing transversely slidable probes alternately connectible to a longitudinal motion-transmitting rod, the rearward end of which operatively engages the plunger of a dial indicator carried by a rotatable holder mounted on the hollow shaft.

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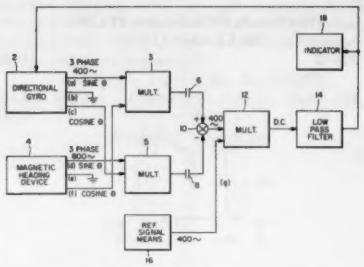
**3,837,086**
**COMPASS COUPLER**
**Robert L. James, Bloomfield, N.J., assignor to The Bendix Corporation, Teterboro, N.J.**
**Filed Aug. 31, 1972, Ser. No. 285,266**
**Int. Cl. G01c** *17/38*
**U.S. Cl. 33—317 D** **8 Claims**

Apparatus for comparing heading angle information provided by a directional gyro with that provided by a magnetic heading device (compass), and providing a bipolar d.c. error signal corresponding to the long time average difference




therebetween. The error signal may be used to drive an indicating device or to torque the gyro until the heading error is washed out.

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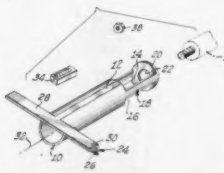
**3,837,087**
**WHEEL ALIGNMENT TOOL**
**Albert E. Dennis, Box 220 A, McGee Circle, Denmark, S.C. 29042**
**Filed Dec. 10, 1969, Ser. No. 883,823**
**Int. Cl. G01b** *19/295*
**U.S. Cl. 33—337** **1 Claim**



A tubular member having a collar at one end for attachment to the spindle of a vehicle wheel and having a cross angle at the end opposite the collar. The tubular member and angle have a flat upper surface for receiving a conventional spirit level to determine camber and caster, respectively.

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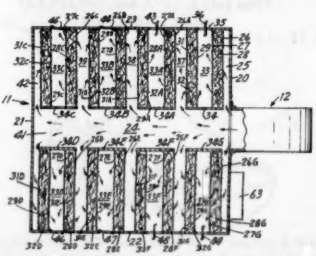
**3,837,088**
**SEQUENCE BATCH DRYER**
**Lowell J. Lenz, c/o John Lenz & Sons, Inc., New Highway 29 N., Alexandria, Minn. 56308**
**Filed Jan. 15, 1973, Ser. No. 323,915**
**Int. Cl. F26b** *3/04, 21/00*
**U.S. Cl. 34—54** **29 Claims**



A method and apparatus operable to dry particulate material, as corn, small grains, beans, rice, nuts and seeds, having a

housing enclosing a plurality of separate columns of particulate material. Hot air directed to the columns sequentially flows through the particulate material in each column. Exhaust passages associated with separate columns have dampers to selectively permit the flow of air through a passage and block the flow of air through the passage to allow sequential flow of air through the columns. Located above the columns is a wet grain holding section for discharging particulate material into the columns. A dry grain holding section is located below the columns for receiving dried particulate material from the columns. Movable doors control the flow of particulate material into and out of the columns.

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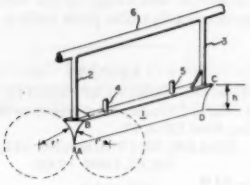
**3,837,089**
**FILLER PIECE FOR DOUBLE DRUM DRIER**

**Henry Embry Peterson, Beaumont, Tex., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed Dec. 19, 1973, Ser. No. 426,030**
**Int. Cl. F26b** *7/00*
**U.S. Cl. 34—17** **7 Claims**



A substantially prismatic filler piece having two concave arcuate side surfaces and located in the nip of a double-drum drier increases the rate of recovery of dry chlorosulfonated polyethylene from its solutions by about 10–40 percent. The filler piece should preferably occupy 40–60 volume percent of the nip. The radii of curvature of the side surfaces are the same as or larger than the radii of the drums.

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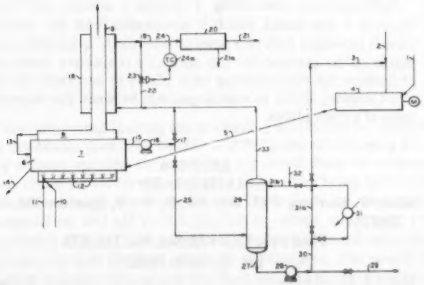
**3,837,090**
**PROCESSING HEATED, MOISTURE LADEN GAS CONTAINING PARTICULATE MATTER**

**Eulas W. Henderson, Toledo, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Nov. 20, 1972, Ser. No. 307,775**
**Int. Cl. F26b** *3/32*
**U.S. Cl. 34—40** **5 Claims**



A method and apparatus are provided for reducing the temperature of a heated, moisture laden gas containing particulate matter to condense at least a part of the moisture content from the stream and thereafter sufficiently increasing the temperature of the stream so that particulate matter can be filtered from the stream without further condensation of moisture. In one embodiment off-gas from a carbon black pellet dryer is treated to condense and remove moisture and thereafter subjected to indirect heat exchange with pellet dryer stack gases to raise the temperature of the off-gas sufficiently to permit filtering of particulate matter from the off-gas without further condensation of moisture.

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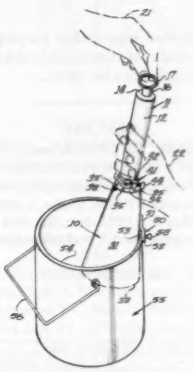
**3,837,091**
**PAINT SPINNER SPRAY GUARD**

**Warns E. Meyer, 12 E. Crystal Lake Ave., Crystal Lake, Ill. 60014**

**Filed Aug. 24, 1973, Ser. No. 391,140**
**Int. Cl. B08b** *11/02*
**U.S. Cl. 34—58** **9 Claims**



A spray guard device intended for utilization with a conventional paint roller and paint brush spinning and cleaning device consisting of an elongated frusto-conical open ended shell having the smaller end adapted to be positioned about the front end portion of the spinner body with the major portion of the shell extending axially forwardly of the spinner body in a manner to overlap and completely surround the item to be spun cleaned thereby, and further provided with a bracket on the exterior of the sheel for detachably attaching the shell in a manner projecting within a container for receiving the spray collected on the interior of the shell in the container. A modification thereof provides that the shell is formed of a skeleton frame structure adapted to support thereover disposable covers for receiving the spray spun off the item being spun cleaned by the spinning cleaning device.

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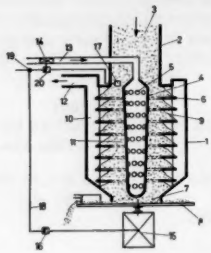
**3,837,092**
**APPARATUS FOR COOLING OR DRYING POURABLE MATERIAL**

**Otto Fritz Mayer, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland**

**Filed Apr. 30, 1973, Ser. No. 355,664**
**Claims priority, application Switzerland, May 1, 1972, 6474/72**
**Int. Cl. F26b** *17/12*
**U.S. Cl. 34—168** **16 Claims**

Pourable material is introduced into the upper end of a tank and moves downwardly about a centrally arranged feed pipe perforated along its length for introducing a gaseous medium into the material, and the material is removed from the bottom of the tank. Horizontally arranged, vertically spaced ring discs are located outwardly from the feed pipe and inwardly from the tank so that the downwardly moving pourable material en-

ters between adjacent ring discs and forms a frusto-conically shaped layer of material. By varying the cross sectional size of the openings in the feed pipe and/or varying the size and/or spacing of the ring discs the treatment of the pourable material by the gaseous medium can be varied.



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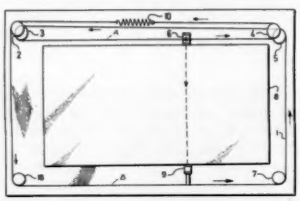
**3,837,093**

## APPARATUS FOR THE DETERMINATION OF THE QUALITY OF A PUPIL'S RESPONSE

**Richard Sykora, Prague, Czechoslovakia, assignor to Ceske vysoke uceni technicke v Praze, Praha, Czechoslovakia**

**Filed May 25, 1973, Ser. No. 364,139**
**Claims priority, application Czechoslovakia, May 25, 1972, 3959-72**
**Int. Cl. G09b 7/04**
**U.S. Cl. 35—9 A** **5 Claims**



Apparatus for the determination of the quality of a pupil's response in an automatic teaching machine with a slide projector. The apparatus comprises a horizontal scanning coordinate system and a vertical coordinate scanning system on each of which there is a movable lamp and a corresponding movable phototransistor and a focussing screen provided with contacts which control the drive of both said systems.

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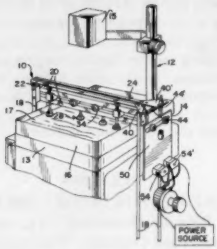
**3,837,094**

## WAVE GENERATING APPARATUS FOR STUDY OF WAVE PHENOMENA

**Henry E. Mazurek, Glen Ellyn, Ill., assignor to Cenco Incorporated, Chicago, Ill.**

**Filed Jan. 15, 1973, Ser. No. 323,646**
**Int. Cl. G09b 23/12**
**U.S. Cl. 35—19 R** **12 Claims**

A wave generating apparatus particularly adapted for use in studying wave phenomena having a plurality of wave source means mounted above a ripple tank and reciprocated vertically by a pair of pivotally mounted parallel rocker arm means to produce waves in the surface of the fluid in the ripple tank. The means driving the rocker arms are adjustable with respect to the rocker arms to vary the amplitude of the waves produced and may be regulated by control means in electrical communication with them to vary the frequency and phase of the waves produced. The bottom of the ripple tank is sloped upwardly from its center to effectively damp the waves in at least one direction. The wave generator and ripple tank may be used in combination with an overhead projector or an overhead light source so that images of the waves produced are projected upon an easily visible plane surface.

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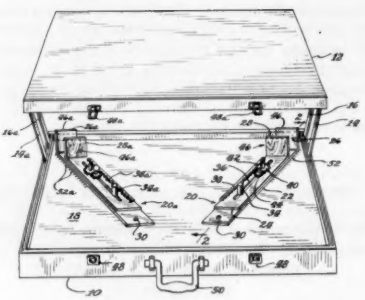
**3,837,095**

## PERCEPTUAL MEASURING APPARATUS AND METHOD

**Eugene F. O'Hara, Chicago, Ill., assignor to Management Programs, Inc., Glen Ellyn, Ill.**

**Filed July 20, 1973, Ser. No. 381,143**
**Int. Cl. G09b 19/00**
**U.S. Cl. 35—22 R** **6 Claims**



Apparatus for measuring a subject's sensory perception wherein a test board which is screenable from the subject's view is provided with two pairs of selectively spaceable sensor plates to be grasped by the subject's respective hands and procedure for manipulating such plates to ascertain the subject's sensory ability to match spacings between the respective pairs of sensor plates.

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**3,837,096**

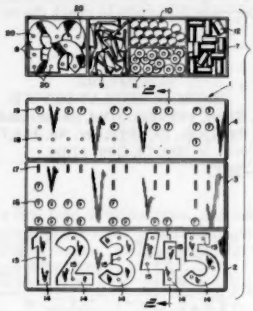
## MATH BOARD

**Alice W. Sterling, P.O. Box 546-B, Rt. 2, Huntersville, N.C. 28078**

**Filed Feb. 12, 1973, Ser. No. 331,833**
**Int. Cl. G09b 19/02**
**U.S. Cl. 35—31 D** **7 Claims**

A math board for children of ages 2–7 having indentations of different colors to receive correspondingly colored Arabic numerals and having groups of indentations to receive correspondingly colored sets of marbles, golf tees, washers, and dowels, the numeral indentations further having golf tee indentations corresponding in number to the respective numerals, and the numerals having perforations therethrough re-

gistering with the golf tee indentations in the numerals. The math board herein is further characterized in that it comprises



hinged together panels for folding to a size corresponding to the size of the compartmentalized tray in which the respective numerals, marbles, golf tees, washers and dowels are stored.

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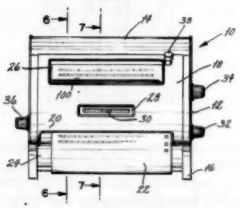
**3,837,097**
**READING TRAINER**
**Russell H. Dymond, St. Louis, Mo., assignor to Reading and Training Systems, Inc., St. Louis, Mo.**
**Filed Mar. 23, 1973, Ser. No. 344,365**
**Int. Cl. G09b** *17/04*; **B41j** *13/03*
**U.S. Cl. 35—35 B** **5 Claims**



An automated reading trainer having provisions for manual or automatic feed. The trainer is in the form of a housing having a front opening for receiving a printed sheet of material with chute means for returning the paper after being fed to the machine through the front thereof. The trainer has a specially designed on and off switch mechanism which causes the engagement of sheet feed means with motor driven means to automatically feed the paper through the machine. The switch in the off position disengages the feed mechanism and permits manual movement of feed rollers to advance the printed sheet at desired speed or to rest the sheet within a viewing aperture. The machine has an aperture or viewing shutter in the form of a plate having a simple handle flange whereby the shutter can be manually moved to expose or narrow the viewing opening to view selected portions of the sheet within the viewing aperture.

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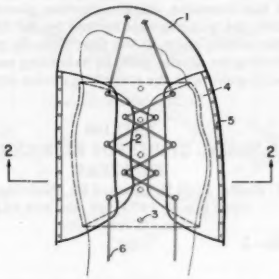
**3,837,098**
**CROSSED DOUBLE LAYER SHOE UPPER**
**Richard K. Rathmell, Ramsey, N.J.**
**Filed Dec. 21, 1972, Ser. No. 317,285**
**Int. Cl. A43b** *00/00*
**U.S. Cl. 36—2.5 AL** **8 Claims**



A shoe with double uppers crossed in tension across the foot, with the inside upper attached to the sole under the foot and the outside upper attached to the wide part of the sole not under the foot.

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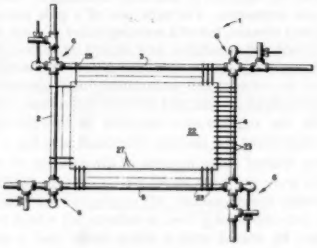
**3,837,099**
**PRECISION NEEDLE-POINT BLOCKER**
**Charles Rayburn Moffitt, 914 Jefferson St., and Ralph Warren Dalton, 320 Minerva P1., both of Paducah, Ky. 42001**
**Filed Jan. 17, 1974, Ser. No. 434,203**
**Int. Cl. D06c** *3/08*
**U.S. Cl. 38—102.5** **7 Claims**



A precisionally adjustable device for blocking needle-point which is adjustable to the size of the needle-point, which device comprises a quadrilateral frame, preferably of tubular construction, wherein adjacent sides of the frame are joined at a common corner, each of the corners being of identical construction and comprising a four-port junction or cross-fitting wherein one of the adjacent sides rigidly engages one of the ports and the other of said sides slidably engages another of said ports and extends through and beyond the opposite port to provide an extended portion, a cross-tee slidably connected to the extended portion but provided with a set screw in the cross-tee so as to prevent movement by engaging the extended portion, the cross-tee being provided with a side extension having an opening therein, which extension slidably engages a jack screw, said jack screw lying in generally parallel relation with said extended portion, support means rigidly connected to the remaining port of the cross junction and provided with a portion extending in generally perpendicular relationship from said jack screw and a portion generally at right angles to said sides, the end of the jack screw being fixedly connected to

the support means and tightening nut means disposed on said jack screw; whereby tightening said set screw on the extended portion and turning said nut means forces the slidable cross-tee through the cross junction and thus forces the slidable side to extend its length and tighten the needle-point, this manipulation being carried out at all four corners. Also provided is a method for stretching or blocking needle-point using the device of this invention which comprises placing the needle-point within the quadrilateral formed by the four sides, connecting the needle-point to the four sides by pin means and then stretching the needle-point by extending each of the sides of the needle-point with the stretching device described.

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**3,837,1[illegible]**

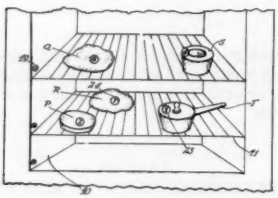
**FOOD-HANDLING GUIDES FOR REFRIGERATORS AND FREEZERS**

**Michael F. Guida, 5100 N. Leonard Dr., Norridge, Ill. 60656**

**Filed Feb. 9, 1973, Ser. No. 330,982**

**Int. Cl. A44c *3/00***

**U.S. Cl. 40—2** **3 Claims**



A chart for identifying enclosed food items deposited in a refrigerator or freezer. The chart is attachable on the front or side of the refrigerator, and has a row of numbers denoting corresponding food items. Pressure-adhesive tabs bearing the numbers are applied to the food containers when the food items are deposited. The tabs are of a pale color for foods which may remain, but of a warning color — such as red — for foods which are perishable and should be removed soon. The chart has index legends — such as letters of the alphabet — to indicate the refrigerator shelves on which the numbered food items have been placed; and lettered self-adhesive tabs are applied in the regrigerator entrance in upward alphabetical order identifying the shelves. The chart also has a column for entering related index legends of the number of servings obtainable from the food items, and a column for the dates on which they are deposited. All entries on the chart are made with a pen containing a water-soluble ink which is non-toxic, and may be erased with a moist swab; and a receptacle is mounted on the chart for keeping tabs and ink pens handy.

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**3,837,101**

**BAGGAGE TAGS**

**Irvin L. Young, Rt. 1, Palmyra, Wis. 53156**

**Filed July 18, 1973, Ser. No. 380,491**

**Int. Cl. G09f *3/14***

**U.S. Cl. 40—21** **2 Claims**

A baggage tag of elongated form designed to be wrapped around the handle of a baggage item to lock in looped form. The tag is formed with a detachable coupon at one end and a tip portion at the other. The tag body has an opening presenting a tongue underneath which the tip — rolled back — is insertible. The tip portion has formations interlocking with side tabs in the opening on the partial retraction of the tip portion, and a stop opposite the tongue to check the re-advance of the tip portion.

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**3,837,102**

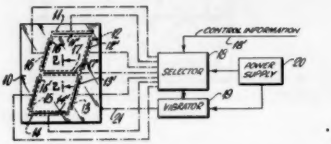
**INDICIA DISPLAY DEVICE**

**Marcel J. E. Golay, 1095 Lutry/Vd, Switzerland**

**Filed Apr. 17, 1972, Ser. No. 244,779**

**Int. Cl. G09f *11/00***

**U.S. Cl. 40—28 C** **5 Claims**




An indicia display device utilizing at least one pair of grids with each grid having a plurality of lines and piezoelectric means for moving said grids one relative to the other to effect the display and disappearance of indicia.

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**3,837,103**

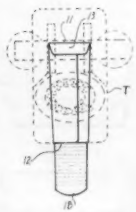
**LIST FINDER**

**Sumner M. Fineberg, 3657 Havenview Cir., Birmingham, Ala. 35216**

**Filed Jan. 2, 1974, Ser. No. 429,538**

**Int. Cl. G09f *3/20***

**U.S. Cl. 40—336** **3 Claims**



A simple, economical list finder adapted for attachment to the underside or surface of the usual telephone. The list finder comprises an envelope which is trapezoidal in shape and a trapezoidal slide in the envelope on which indicia may be written. The parts are so dimensioned that the slide is held captive, that is, cannot be pulled completely out of the envelope, but can be pulled out far enough to read indicia placed on the major portion of its surface.

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**3,837,104**

**METHOD AND SYSTEM FOR KEEPING RECORD OF THE CONTENTS OF A CONTAINER**

**Rolf Peter Brotschi, Hirschweg 9, 7067 Grunbach, Germany**

**Filed May 4, 1973, Ser. No. 357,340**

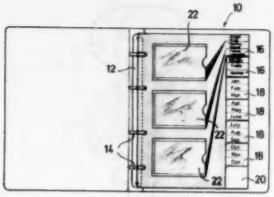
**Claims priority, application Germany, May 8, 1972, 7217361**

**Int. Cl. B42d *15/00***

**U.S. Cl. 40—104.18** **10 Claims**

In a system for keeping record of the contents of a storage means, two groups of pages are provided with pockets and in-

dications of the contents of various pockets, and a pad of three forms is marked with two kinds of information. One form of the three is inserted into a pocket of the one group in accordance with a first type of information, another form is inserted into a pocket of the other group in accordance with a second type of information, the remaining form being attached to the item to be stored.

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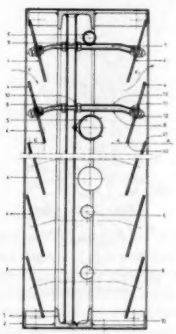
**3,837,105**

**LUMINOUS OUTDOOR SIGN BOARD RESISTANT TO INCLEMENT WEATHER**

**Rene Verazin Tchakgarian, 19, Ave. Charles de Gaulle, Autun, France**

**Filed Feb. 9, 1973, Ser. No. 331,334**
**Int. Cl. G09f *13/04***
**U.S. Cl. 40—130 R** **6 Claims**



Luminous board designed specially to resist inclement weather and in particular strong gusts of wind, this board being constituted by an open-work framework in the form of a case of which at least one longitudinal wall is formed by slats illuminated from inside the case, said framework being of the open-work type and the support slats being contiguous in a vertical plane to form a continuous wall preventing the diffusion of luminous rays toward the exterior, the slats in addition being spaced out laterally with respect to one another to form between them communication interstices allowing the wind and rain water to pass through the board, both horizontally and vertically.

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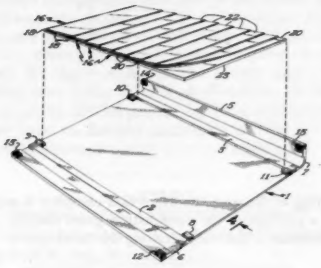
**3,837,106**

**DATA CARD HOLDER**

**Dennis E. Lofstrom, R. R. 1, Fort Ripley, Minn. 56449; William A. Churchill, and Richard L. Thul, both of St. Paul, Minn., assignors to said Lofstrom, by said Thul and Churchill**

**Filed Mar. 14, 1973, Ser. No. 341,034**
**Int. Cl. G09f *1/10***
**U.S. Cl. 40—104.03** **10 Claims**

A card holding board provided with a plurality of staggered, card receiving pockets along its length is utilized to hold a plurality of data cards in shingled, overlapping relation to each other with a predetermined, data recording margin on each card exposed for the insertion of laboratory test data thereon. A pair of hinged hold down panels attached to the opposite, longitudinal edges of the board are pivoted over the ends of the cards and locked in place to hold the cards firmly against the baseboard during handling of the board and recording of test data in a laboratory.



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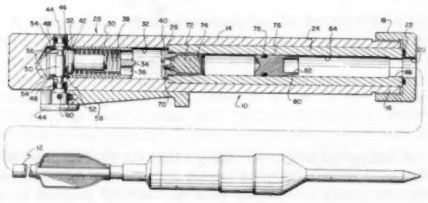
**3,837,107**

**SILENT LAUNCH GUN FOR PROJECTILES**

**Frank H. Swaim, Silver Spring, and Raymond S. Widmayer, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Sept. 25, 1972, Ser. No. 291,878**
**Int. Cl. F41c *19/04*; F41f *17/12***
**U.S. Cl. 42—1 F** **3 Claims**



A silent launching system for projectiles having a launch tube with a breech to receive a special cartridge and a constricted muzzle and containing a sabot. The projectile, such as an arrow, is loaded tail-first into the muzzle to contact the sabot. When the cartridge is fired, the sabot and projectile accelerate toward the muzzle, where the sabot is arrested in the constriction and the projectile continues out the muzzle to the target. The arrested sabot traps the expanding gases within the launch tube, providing a flashless, smokeless, and noiseless launch.

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**3,837,108**

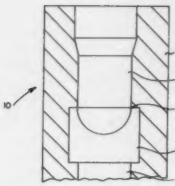
**DEVICE FOR THE REDUCTION OF KINETIC ENERGY OF BULLETS FROM CARTRIDGE AMMUNITION**

**Georg Seitz, Am Bruchkamp 2, 3301 Watenbuttel, Germany**

**Filed June 5, 1973, Ser. No. 367,126**
**Int. Cl. F41c *21/00, 21/10***
**U.S. Cl. 42—76 R** **6 Claims**

A device, which may be either incorporated into the original barrel of a gun or into a subcaliber barrel for installa-

tion in a prefabricated gun, comprises an expansion chamber located immediately downstream of the cartridge opening.



Upon firing of the gun, the expansion chamber is available to receive a portion of the combustion gases thereby reducing the momentum of the bullet leaving the cartridge.

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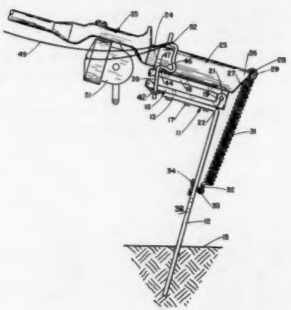
**3,837,109**
**FISHING ROD HOLDER**
**Robert DeJulio, 4444 Clay St., Denver, Colo. 80211**
**Filed May 29, 1973, Ser. No. 364,458**
**Int. Cl. A01k** *97/00*
**U.S. Cl. 43—15** **4 Claims**



A fishing rod holder providing a tube for the reception of a fish rod handle on a pivot mount whereby the tube and rod may be moved rotationally from an "at rest" position to an elevated line retrieving position. The holder has a support stand inclusive of an angled section disposed for foot contact to facilitate engagement of the holder in a ground surface. A fish line engages and can move a release latch which has a plurality of tension adjusting engaged positions whereby the latch can be set for the heavier and lighter release forces that might be exerted on the line by various sized fish.

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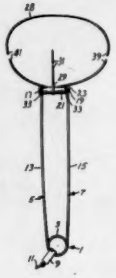
**3,837,110**
**ANIMAL TRAP**
**Camiel J. Coquyt, Box 45, Ghent, Minn. 56239**
**Filed Dec. 6, 1973, Ser. No. 422,175**
**Int. Cl. A01m** *23/34*
**U.S. Cl. 43—87** **9 Claims**

An animal trap having a central coil with arms extending therefrom, and a snare wire extending between the terminal portions of the arms, the snare wire having a centrally located knot therein, the knot being adapted to assume (1) an enlarged trapable configuration when the arms are urged towards each other to a loaded position and (2) a trapping configuration when the arms are permitted to relax to a sprung position, a telescoping locking mechanism for releasably hold-



ing the arms in the loaded position, and a trigger actuated by the animal to be trapped for releasing the locking mechanism.

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**3,837,111**
**ANIMATED TOY CONTAINER**
**R. Ira Godfrey, and Janelle R. Godfrey, both of 4501 Elmdale Rd., Golden Valley, Minn. 55422**
**Filed Feb. 7, 1973, Ser. No. 330,223**
**Int. Cl. A63h** *3/00*
**U.S. Cl. 46—11** **1 Claim**

The disclosure is directed to a small container formed in the likeness of a clown, Easter bunny or other animated toy. The head is formed from a polystyrene ball secured to felt pieces forming a collar cemented to the lid or cover of a small jar forming the container. The remainder of the jar is covered by a felt strip in the form of arms and hands holding an appropriate object at the front of the jar. The bottom of the jar is secured to the material conforming to the general outline of the jar and protruding in front to form feet of the character or animal portrayed. The animated toy container is first assembled in kit form before assembly in combination.

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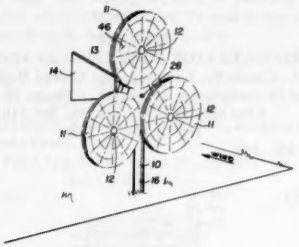
**3,837,112**
**MULTIPLE WINDMILL**
**John R. Peterson, Withee, Wis., assignor to The Raymond Lee Organization Inc., New York, N.Y., a part interest**
**Filed Mar. 26, 1973, Ser. No. 344,779**
**Int. Cl. A63h** *33/40*
**U.S. Cl. 46—58** **3 Claims**

A multiple windmill in which three fan wheels are mounted on a common rotatable frame and are each rotatably linked to a common fixed wheel or gear. The fan wheels are each rotated by the force of the wind and in turn rotate the common frame in which they are mounted. The device may be in

the form of a display device such as an ornamental lawn device, with the exterior of each fan blade marked so as to



create ornamental patterns when the blades and the frame are rotated by the wind. The common stationary drive wheel serves to rotate all three blades at a common velocity.

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**3,837,113**

**SELF-ROCKING DOLL**

**Ralph Triska, 3804 S. Harvey Ave., Berwyn, Ill. 60402**

**Filed Jan. 31, 1973, Ser. No. 328,457**

**Int. Cl. A63h *13/00***

**U.S. Cl. 46—116** **6 Claims**

A self-rocking doll in a rocking chair including a flexible attachment means between the doll and rocking chair, a motor mechanism, an operating lever interconnecting the motor mechanism and doll, said operating lever being actuable by the motor mechanism to thereby effect back and forth movement of the doll and consequent rocking of rocking chair.

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**3,837,114**

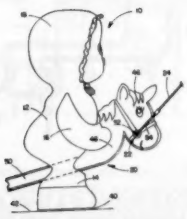
**WALKING TWO-LEGGED FIGURE TOY WITH RIGID FORWARD EXTENSION**

**Adolph E. Goldfarb, Tarzana; George C. Strader, and Judy D. Strader, both of Paso Robles, all of Calif., assignors to Adolph E. Goldfarb**

**Filed Dec. 7, 1972, Ser. No. 313,171**

**Int. Cl. A63h *3/22***

**U.S. Cl. 46—149** **16 Claims**



A two-legged walking figure toy having a pair of resiliently mounted legs. The legs may be weighted and provided with relatively high friction means for engagement with the floor or other surface on which the figure can walk. The figure may be propelled forwardly and caused to walk by means of a forwardly extending rigid extension mounted on the toy figure, providing a point of attachment for a cord or other pull means. The point of attachment is preferably centered from side-to-side, disposed substantially forwardly of the figure, and positioned between the crotch and neck of the figure. By pulling forwardly and upwardly on the pull means, the figure is caused to walk, i.e., alternate legs shift forward to effect walking action, while the figure is maintained upright and prevented from falling over. Thus, there is good stability for the figure without requiring precise positioning or manipulation of the angle and force on the pull means, so that the toy may be played with and caused to walk by even a small child.

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**3,837,115**

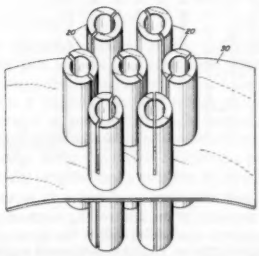
**NOISEMAKING AMUSEMENT DEVICE**

**Jorma Vennola, Princeton, N.J., assignor to Columbia Broadcasting System, Inc., New York, N.Y.**

**Filed Feb. 22, 1972, Ser. No. 227,803**

**Int. Cl. A63h *5/00***

**U.S. Cl. 46—174** **10 Claims**



A noisemaking toy or amusement device that includes a plurality of elongated wooden cylindrical members that have circumferential grooves centrally located therein. A flexible supporting sheet having a plurality of circular apertures is provided, the apertures conforming in shape to the grooves, whereby the sheet is adapted to receive and hold the central portions of the members. During typical play, a hand grips the sheet by its corner or end and shakes it vigorously, whereupon the ends of the members strike each other alternately on opposite sides of the sheet and cause a clicking commotion. In a preferred embodiment of the invention each of the members has an axial borehole forming a cavity therein.

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**3,837,116**

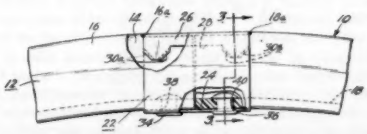
**HOOP TOY**

**George C. Sun, 801 Cooper Landing Rd., Cherry Hill, N.J. 08034**

**Continuation of Ser. No. 79,434, Oct. 9, 1970, abandoned. This application July 31, 1972, Ser. No. 276,370**

**Int. Cl. A63h *11/00***

**U.S. Cl. 46—220** **1 Claim**



A hoop toy comprising an annular member of circular shape made of a flexible resilient material, said annular member hav-

ing generally parallel side walls and a wall connecting wall spanning the side walls at their inner edge defining a radially outwardly facing channel, a clip connecting the terminal ends of the body in end-to-end relation, said clip conforming generally to the contour of the outer faces of the side walls and connecting wall of said annular member and means for securing said clip to said annular member to lock the ends thereof in end-to-end relation.

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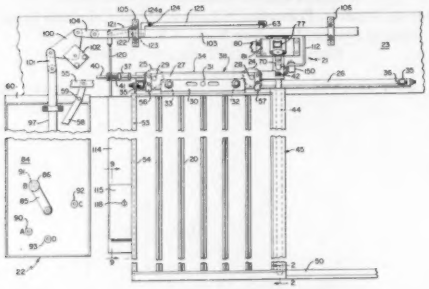
**3,837,117**
**LOCKING AND UNLOCKING MECHANISM**

**Gerald L. Butt, Independence, Ky., assignor to Stewart-Decatur Security Systems, Incorporated, Covington, Ky.**

**Filed Nov. 2, 1972, Ser. No. 303,240**
**Int. Cl. E05b *47/00***
**U.S. Cl. 49—18** **20 Claims**



A locking and unlocking mechanism to secure a door has four control positions of the controlling mechanism. Two positions of the control mechanism place the securing mechanism in a deadlock condition. Direct operational links connect the control mechanism with the securing mechanism.

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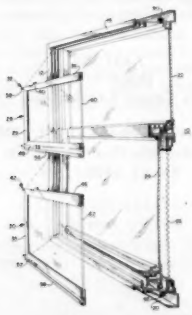
**3,837,118**
**STORM WINDOW**

**Lorane C. Goss, Jr.; James T. Cribben, both of Mechanicsburg, and Joseph J. Miller, Plain Field, all of Pa., assignors to Capitol Products Corporation, Mechanicsburg, Pa.**

**Filed May 2, 1973, Ser. No. 356,465**
**Int. Cl. E05c *7/02***
**U.S. Cl. 49—61** **12 Claims**



A storm window for single or double hung windows including flush storm sash track in window jambs, movable plunger assembly at the top of each sash and interchangeable upper and lower storm sashes.

The window construction is especially adapted for an interior hung storm sash system, but may also be constructed as an exterior hung storm sash system.

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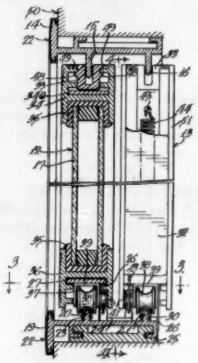
**3,837,119**
**REFRIGERATOR DOOR CLOSURE SYSTEM**

**Martin L. Conneally, Lombard, and George Hajduk, Dolton, both of Ill., assignors to Ardco, Inc., Chicago, Ill.**

**Filed May 14, 1973, Ser. No. 360,310**
**Int. Cl. E05d *15/06***
**U.S. Cl. 49—404** **2 Claims**



A horizontal sliding glass panel is secured to the door frame by flexible insulating mounting gaskets, a self-contained elastically energized door closing system is concealed in the door frame recess by snap-in cover plates, the door frame is supported by a trolley system riding on a track and powered by the elastic closing system; each door engages a tracking system to form a single labyrinth seal between the track and U-shaped seal gaskets with further cold air barriers provided by wipers at the vertical interface and bottom of the doors, the door assembly being mounted with a bottom leveling pad in a refrigeration unit.

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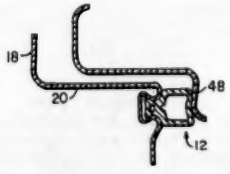
**3,837,120**
**DISHWASHER INNER DOOR PANEL AND GASKET ARRANGEMENT**

**Jack G. Hanks, Bethel Park, Pa., and Olan L. Long, Columbus, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed May 15, 1972, Ser. No. 253,487**
**Int. Cl. E06b *7/23***
**U.S. Cl. 49—489** **6 Claims**




The inner panel is formed of a single sheet of steel with a bulbous gasket retaining groove being formed as an integral part of the panel, as distinguished from a gasket retaining channel attached to a panel as a separate piece. The preferred gasket has a base portion which is generally complementary in

shape to the cross-sectional shape of the groove, with both the base and sealing sections of the gasket being hollow. To facilitate the assembly of the gasket to the groove, the web between the base and sealing sections is provided with a tracking groove which aids in forcing the gasket into place by rolling a wheel along the length of the gasket.

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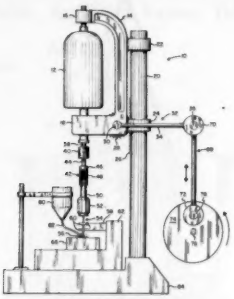
**3,837,121**
**DRILLING MACHINE**

**Kenneth L. Schirmer, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.**

**Filed Aug. 9, 1973, Ser. No. 387,057**
**Int. Cl. B28d** *5/02*
**U.S. Cl. 51—56** **12 Claims**



Disclosed is a machine for drilling into hard materials.

The machine comprises a conventional miniature drill press, improved by the addition of a camming device to cause the drill to reciprocate while rotating, and a shock absorber interposed between the drill motor and bit to absorb a portion of the impact of the bit tip against the work piece. In certain embodiments means are provided to introduce quantities of an abrasive suspension to the bit tip.

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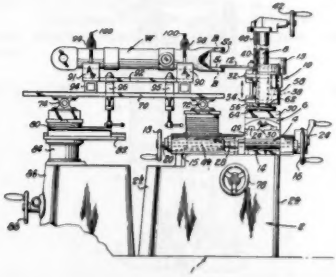
**3,837,122**
**GRINDING APPARATUS**

**Charles N. Ferguson, 1623 X St., Dallas, Tex. 75229**

**Filed Jan. 10, 1973, Ser. No. 322,426**
**Int. Cl. B24b** *7/00, 9/00*
**U.S. Cl. 51—56** **10 Claims**



Grinding apparatus for internal surfaces of clevises comprising a support frame having a table secured thereto for movement in a first horizontal direction, said table carrying a saddle mounted for horizontal movement in a second horizontal direction perpendicular to the first horizontal direction of movement. The saddle has a carriage mounted thereon adapted for vertical movement, said carriage having a rotatable spindle secured thereto upon which a grinding wheel is mounted. A work piece support table is pivotally mounted relative to the support frame such that the grinding wheel can be moved in directions parallel to three mutually perpendicular axes to grind surfaces on a stationary work piece.

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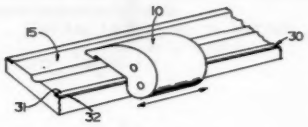
**3,837,123**
**EDGE SHARPENER**

**Wilburn F. Bradbury, 1234 Ridgewood, Northbrook, Ill. 60062**

**Filed Feb. 9, 1973, Ser. No. 331,069**
**Int. Cl. B24d** *5/00, 7/00*
**U.S. Cl. 51—208** **5 Claims**




A tool for sharpening metal edges, particularly running edges on snow skis, in which a hand held housing supports pairs of abrading wheels rotatably mounted on parallel axes spaced in such a manner that the wheel peripheries overlappingly intersect at substantially right angles and thereby tangently engage right angularly related surfaces forming the ski's running edge when the tool is operatively positioned for guided movement longitudinally over the ski bottom.

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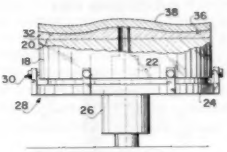
**3,837,124**
**METHOD FOR MAKING REPLICA CONTOUR BLOCK MASTERS FOR PRODUCING SCHMIDT CORRECTOR PLATES**

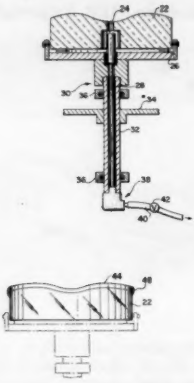
**Thomas J. Johnson, Palos Verdes Estates, and John F. O'Rourke, Torrance, both of Calif., assignors to Celestron Pacific, Torrance, Calif.**

**Filed Sept. 26, 1973, Ser. No. 400,994**
**Int. Cl. B24b** *13/00, 1/00*
**U.S. Cl. 51—283** **7 Claims**



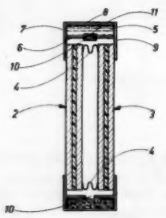

A method for making replica contour block masters for use in producing Schmidt correctors wherein a finished Schmidt corrector plate to be duplicated, which is flat on one side and figured on the other, is placed with its flat side on a flat surfaced spindle master, a thin piece of glass to constitute a replica piece is placed on the corrector plate and a vacuum drawn therebetween to conform their surfaces, the replica piece is ground and polished flat on the free surface, the corrector plate and replica piece removed from the spindle master and the replica piece placed flat side to flat surface on the spindle master in a semi-permanent bond therewith and constituting together a contour block master.

3,837,125
METHOD AND SYSTEM FOR MAKING SCHMIDT CORRECTOR LENSES
Thomas J. Johnson, Palos Verdes Estates, Calif., assignor to Celestron Pacific, Torrance, Calif.
Filed Sept. 4, 1973, Ser. No. 393,846
Int. Cl. B24b 1/00, 13/00
U.S. Cl. 51—284 11 Claims



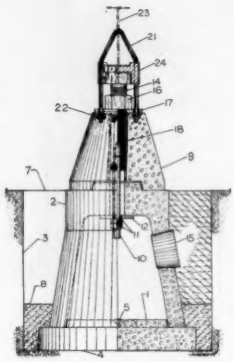
A method and system for making Schmidt correctors wherein the surface of a master glass template is ground and polished to an accurate inverse curve of a corrector plate, a thin glass workpiece is placed under vacuum on the master glass template in intimate curve conformed glass-to-glass contact over the entire mating surfaces, the template and workpiece being conjointly rotated while grinding and polishing the upper free surface of the workpiece to a uniform accurate flatness whereafter the vacuum is released and the workpiece is removed from the template in final form.

3,837,126
FIRE SCREEN FOR A STRUCTURAL PANEL
Jean-Pierre Voiturier, Gerpinnes, and Francis Jacquemin, Monceau-sur-Sambre, both of Belgium, assignors to Glaverbel-Mecaniver, Watermael-Boitsfort, Belgium
Filed June 19, 1972, Ser. No. 263,762
Claims priority, application
Int. Cl. E04b 1/92
U.S. Cl. 52—1 13 Claims



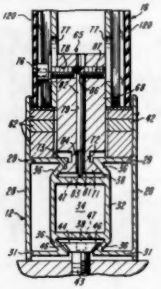
A structural panel comprising one or a plurality of spaced sheet numbers has a frame around its edge. At least one body of material capable of screening the structural panel against fire is provided either in the form of a mechanical member or a chemically activated substance. The member or substance are retained in an inoperative position in the vicinity of the structural panel and are released to an operative position in response to a predetermined rise of temperature wherein a body of material covers substantially one or more faces of the panel.

3,837,127
MOBILE HOME LEVELING AND HOLD-DOWN SUPPORT
B. Frank McMichael, R.D. No. 4, Box 280, and Edward J. Baranski, 1503 Herrick St., both of New Castle, Pa. 16101
Filed Oct. 10, 1972, Ser. No. 296,105
Int. Cl. A45f 3/44; E04g 25/06
U.S. Cl. 52—126 3 Claims



This invention consists of a multi-sectioned, pre-cast support for mobile homes and similar structures, incorporating leveling and hold-down devices to facilitate and improve the finished installation.

3,837,128
PARTITIONING SYSTEM
William R. O'Brien, Xenia, Ohio, assignor to Thomas J. Fleury, West Caldwell, N.J. and Conrad P. Sheehan, New York, N.Y., part interest to each
Filed Oct. 24, 1972, Ser. No. 299,707
Int. Cl. E04b 2/60
U.S. Cl. 52—241 5 Claims



A series of rectangular wall panels are confined between vertical and horizontal frame members connected by clamping devices which attach individually to the frame members. Each clamping device includes a member which extends into a square center opening within one frame member and has a

truncated head portion projecting into a dovetail groove within the adjacent frame member. In one embodiment, the head portion of the clamping member is locked to the frame member by an extendable pin which projects outwardly from the center of the head portion and presses the head portion against the sides of the groove. In another embodiment, the head portion is locked by a wedge element which is inserted into the groove to force the head portion against the sides of the groove.

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**3,837,129**

## MULTIPLE GLAZING UNIT

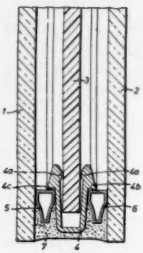
**Ernst Ingvar Losell, Malmo, Sweden, assignor to AB Emmaboda Glasverk, Emmaboda, Sweden**

**Filed Oct. 20, 1972, Ser. No. 299,486**

**Claims priority, application Sweden, Oct. 29, 1971, 13762/71**

**Int. Cl. B32b** *17/10*

**U.S. Cl. 52—309** **3 Claims**



A multiple glazing unit comprising two glass sheets and at least one impact resistant middle sheet of plastic material which to compensate for the elongation of the plastic and for temperature changes is so mounted that there is an additional space for the middle sheet in which to expand in its own plane. The means for mounting the middle sheet is a U-shaped strip which engages the middle sheet only by means of the extremities of the U-limbs and which clamps the middle sheet solely by its inherent resilience.

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**3,837,130**

## WINDOW MOUNTING ARRANGEMENT

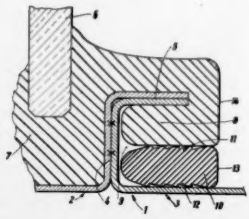
**Christian Hildebrandt, Wilsche, and Karl Erck, Wolfsburg, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany**

**Filed June 13, 1973, Ser. No. 369,491**

**Claims priority, application Germany, June 14, 1972, 2228870**

**Int. Cl. E06b** *3/62*

**U.S. Cl. 52—400** **10 Claims**



An arrangement for mounting a pane of glass, such as windshield, in an automobile window frame comprises a grooved channel associated with the window frame, an elastic sealing molding, and a wedge. The sealing molding includes a pane-engaging part, located exteriorly on the automobile relative to the channel, and a retaining lip part. At least a portion of the retaining lip part of the sealing molding protrudes into the groove of the channel and lies against the inner surface of one wall of the channel. The portion of the retaining lip part that protrudes into the groove is narrower than the groove. The wedge is inserted into the groove between the retaining lip and the second, opposite wall of the channel to hold the retaining lip in place in the groove.

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**3,837,131**

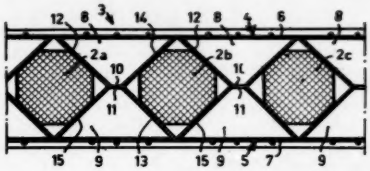
## CAST CONCRETE CONSTRUCTION

**Adrianus Theodorus Maria Bisschops, Santhorst 161,, Leiderdorp, and Onno Jan Theodoor Blok, Kievietslaan 25,, Wassenaar, both of Netherlands**

**Filed Aug. 14, 1972, Ser. No. 280,700**

**Int. Cl. E04c** *5/20, 3/29*

**U.S. Cl. 52—577** **2 Claims**



The present invention relates to a concrete construction having a number of cast-in bar-shaped displacement bodies of plastic, e.g., polystyrene, which are held in place by a number of anchor-elements.

A concrete construction of this type is known from the Dutch Patent Application 70 18413. The displacement body has a quadrangular cross-section and is clamped by means of a channel shaped clip, which exclusively engages the bottom-section of the bar and itself is clamped between parts of the casing. Since will small dimensions of the displacement bodies, the buoyancy forces, acting during casting and hardening of the concrete, play a relatively minor role, such a unilateral engagement can be admissable. However, for larger dimensions of the displacement bodies having large buoyancy forces such as a construction is not adequate and the danger arises that the displacement bodies will float.

An object of the present invention aims at eliminating this disadvantage and to supply a concrete construction, in which the floating of the displacement bodies which may have large dimensions and correspondingly large buoyancy is prevented.

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**3,837,132**

## WALL CONSTRUCTION

**Konrad Weller, Munich, Germany, assignor to Wilhelm Bofinger, Ilisfeld, Germany**

**Continuation of Ser. No. 878,683, Nov. 21, 1969, abandoned. This application Aug. 9, 1972, Ser. No. 279,168**

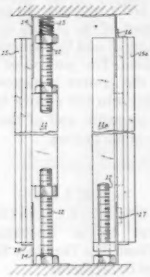
**Claims priority, application Germany, Nov. 25, 1968, 1659051**

**Int. Cl. E04b** *2/30*

**U.S. Cl. 52—479** **6 Claims**

A wall construction has a pair of upright first wall panels located in a first plane and having facing edge portions which defined between themselves an upright first gap. A pair of upright second wall panels correspond to the first wall panels and are located in a second plane substantially paralleling the

first plane, with their facing edge portions defining an upright second gap. First and second supports are located in the



respective first and second gaps and support the first and second wall panels in such a manner that the supports do not transmit sounds to one another.

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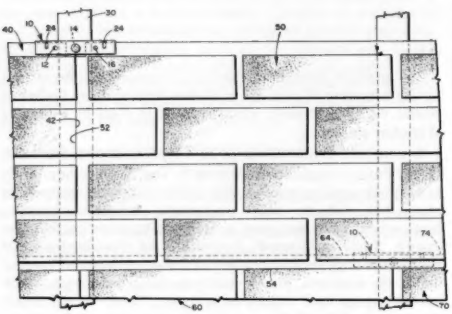
**3,837,133**
**PANEL CLIP**
**Robert E. Mollman, Moreland Hills, Ohio, assignor to Alside, Inc., Akron, Ohio**
**Filed July 21, 1972, Ser. No. 273,731**
**Int. Cl. E06b** *3/54;* **A44b** *21/00*
**U.S. Cl. 52—483** **6 Claims**



A panel clip for mating lateral edges of adjacent panels and securing them to each other. The clip is U-shaped with foldedover edges which have serrated sections at each end. A plurality of holes allow the mated panels to be secured by nailing to a structural element like a stud which may not occur at the seam of the mated edges.

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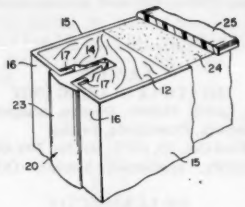
**3,837,134**
**SHEET METAL FACED SLAB DOOR**
**Joseph DiFazio, Warren, Mich., assignor to Acorn Building Components, Inc., Detroit, Mich.**
**Filed July 11, 1973, Ser. No. 378,320**
**Int. Cl. E04b** *1/68, 2/28*
**U.S. Cl. 52—619** **2 Claims**

A slab door formed of a wood frame having a wide, deep, vertically extending groove formed in the exposed edges of each of the opposite vertical frame stiles, and each face of the frame being covered by a thin sheet of metal whose opposite vertical edges are bent into edge portions, covering the stile edges, and terminating in bent edge flanges which loosely extend into their adjacent groove. The adjacent pair of edge flanges within each groove are spaced apart from each other and from the bottom of the groove. A T-shaped spacer is arranged with its head portion overlapping the adjacent edge portions and its leg inserted between adjacent flanges and ter-



minating in a free barbed end engaged with the groove wall inwardly of the flanges for locking the metal edge portions against springing away from the frame stiles and for forming a thermal insulating between the flanges.

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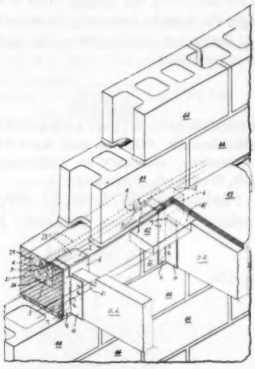
**3,837,135**
**COMBINED JOIST AND REINFORCING BAR HOLDER AND STRUCTURE FORMED THEREWITH**
**Anthony J. Zachman, 767 Loma Verde Ave., Palo Alto, Calif. 94303**
**Filed May 25, 1972, Ser. No. 256,680**
**Int. Cl. E04c** *5/16;* **E04b** *1/38*
**U.S. Cl. 52—702** **8 Claims**

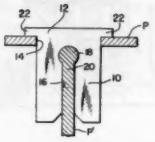


A novel structural device is constructed to hold a building joist in position while at the same time serving to tie the joist into a reinforced concrete wall structure by combining with a steel reinforcing bar therein. The device further provides for positive joining to a masonry or brick wall and especially a hollow concrete block construction to greatly enhance the strength and rigidity of the entire structure. Fabrication from a single piece of sheet metal utilizing spot welding greatly adds to the ease of manufacture, strength, and rigidity of the device as well as the resulting structure.

## 3,837,136
## DEVICES FOR CONNECTING TWO PLATES

Francis David Graham, Cedar Grove, and Maurice Cyril Bryceland, Denville, both of N.J., assignors to Swisslok Company, Parsippany, N.J.

Filed July 19, 1972, Ser. No. 272,867
Int. Cl. F16b *19/00*
U.S. Cl. 52—760 7 Claims



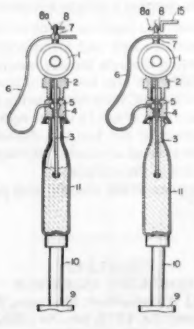

A device for connecting two plates in substantially perpendicular relationship comprises a shank and a head. The shank is intended to be inserted into an opening in a first plate and the head acts to limit the insertion of the device into the opening. The shank is provided with a slot which is adapted to receive a marginal portion of a second plate. The slot is widened in the vicinity of its base and the base is spaced from the head so that upon the maximum insertion of the shank in the opening to correspond to an abutment position of the head and the first plate and an abutment position of two plates, the portion of the second plate received in the slot will be locally deformed in the area of the base to increase its lateral dimension and thereby connect the two plates.

The devices are stamped or blanked from flat strip stock. In one enbodiment, the device is a flat piece which is accommodated by a rectangular opening. In another embodiment, a pair of parallel shanks are connected to one another to double the holding strength of the device. In addition, round or circular openings may be provided in the plate through which the shanks of the devices are inserted.

## 3,837,137
## METHOD AND MEANS FOR FILLING BEER OR THE LIKE INTO CONTAINERS WITHOUT INTRODUCTION OF AIR

Toyohiko Yatsushiro; Tsuyoshi Takashima; Takashi Iwasaki, all of Tokyo, and Susumu Okamura, Yokohama, all of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 29, 1972, Ser. No. 319,646
Int. Cl. B65b *31/06*
U.S. Cl. 53—22 R 6 Claims

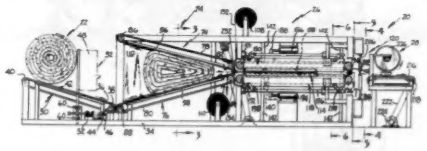



A centering bell adapted to hold a container in register with a filling valve during filling operation is bored to receive with clearance a tube extending from the filling valve to be inserted into the container. A flexible tube extends between the centering bell and a gas valve mounted on or within the filling valve to provide communication between the latter and the interior of the container through the bore of the centering bell. The gas valve is opened upon completion of a filling operation so that while the filling tube is being gradually removed out of the container after the same has been filled to capacity with the liquid delivered through the filling tube, an inert gas such as carbon dioxide or nitrogen gas is introduced through the bore of the centering bell into an empty space created within the container by the gradual removal of the filling tube.

## 3,837,138
## METHOD AND APPARATUS FOR COMPRESSING MATERIAL AND ENCLOSING THE SAME IN A PLASTIC FILM

Rupert Douglas Terry, Toledo, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Feb. 23, 1973, Ser. No. 335,412
Int. Cl. B65b *63/02*
U.S. Cl. 53—24 19 Claims



A method and apparatus, for individually packaging units of a compressible material, compress the material and then enclose the material within a plastic film. The unit of the compressible material, e.g., a batt of insulation, is introduced between a pair of converging conveyors whereby opposing surfaces of the conveyors apply compressive forces to major faces of the compressible material to compress the material to the desired degree. After the material is compressed to the desired degree, it is introduced between a pair of continuous sheets of plastic film. The material is located between the sheets so that lateral edge portions and transverse portions of the sheets extend beyond the peripheral edges of the compressed material. The lateral edge portions and transverse portions are then heat sealed together to enclose the units of compressed material. This operation successively packages a number of individual units with the heat sealing operation for the transverse portions of the sheets simultaneously sealing the trailing transverse portions of the sheets for one unit, sealing the leading transverse portions of the sheets for another unit and reducing the integrity of the sheets at the juncture between these transverse portions to such an extent that the sheets enclosing the units of material can be separated.

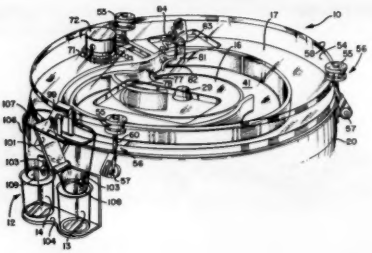
## 3,837,139
## APPARATUS FOR HANDLING AND COUNTING PILLS AND THE LIKE

Harry G. Roseberg, 2011 S. Bedford St., Los Angeles, Calif. 90034

Filed July 5, 1973, Ser. No. 376,708
Int. Cl. B65b *57/20*
U.S. Cl. 53—59 R 13 Claims

To improve the reliability and speed of handling and counting pills, such as for filling prescriptions, an apparatus is provided in which a rotatable turn-table member and coaxial rotatable inner member centrally located of the turn-table and having an upper surface coplanar therewith serve to rotate and agitate the pills into a single file formation whereupon the pills are passed outwardly through a discharge passage

equipped with a photo-electric sensor for developing an exact count of the number of pills discharged. Overlying the horizontal surface of the inner member and the coplanar surface of the turn-table member is a barrier which circumscribes an interior pill receiving region or area of the rotating surfaces into which unprocessed or uncounted pills are dumped. The outer rotating surface of the turn-table member causes the pills to be rotated toward an inlet of a discharge passage which interrupts the circumferential barrier substantially tangent to the perimeter of the inner member surface. Adjacent the entry point to the discharge passage the pills assume a single file formation by virtue of the rotating coplanar surface of the inner member, which rotates at a higher speed than the turn-table member, so as to automatically remove excess pills at the discharge entry and return them to the outer and slower rotating surface. The discharge passage itself extends in a continuous uniform curvilinear path tending in the direction of rotation of the turn-table to the outer perimeter thereof where the pills are discharged into a container. The photo-electric sensor



for counting is mounted adjacent the outlet point of the discharge passage. To provide reliable and high speed counting, the curvilinear discharge passage causes a continuously increasing separation of adjacent pills as they progress outwardly from the center of the table toward the outer perimeter where the greatest separation is achieved as the pills pass by the photoelectric sensor. One of the walls forming the inlet to the discharge passage is provided with an upper surface which slopes downwardly away from the inlet opening to define a prow-like projection which causes bunched pills or capsules to ride up such surface and fall to one side thereof so as to either enter the discharge passage or return to the rotating surface of the inner member, thereby breaking up any log jamming which may occur at the inlet. An adjustable pill "decapper" and guide finger member is provided adjacent the entry point of the discharge passage to knock-off or dislodge occasionally stacked pills, especially in the case of tablets, and to guide or force a portion of an on-rushing jam of tablets outwardly away from the discharge inlet and onto the inner rotating member so as to again eliminate congestion at the inlet.

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**3,837,140**

**STACKING MACHINE**

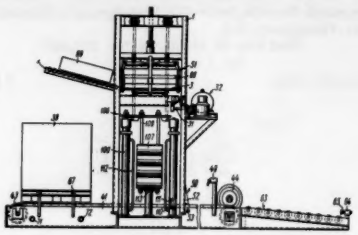
**Oleg Alexandrovich Golantsev, Leninsky prospekt, 10, kv. 44; Vasily Vasilievich Zhdaneev, Olkhovy pereulok, 5, kv. 35; Vladislav Ivanovich Bocharov, pereulok Parashjutistov, 6, kv. 75, all of Voronezh, and Evgeny Dmitrievich Bodrov, ulitsa Scherbakovskaya, 9, kv. 55, Moscow, all of U.S.S.R.**

**Filed June 29, 1973, Ser. No. 374,951**

**Int. Cl. B65b** *35/30*

**U.S. Cl. 53—159** **6 Claims**

A stacking machine wherein a lever grab for loads is mounted above an accumulating table. The grab performs vertical motions under the effect of a counterweight whose mass



is greater than that of the empty grab but smaller than that of the grab with the load.

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**3,837,141**

**DEVICE FOR TRANSFER AND POSITIONING SEALING CAPSULES FOR FEEDING A BOTTLE CAPPING MACHINE**

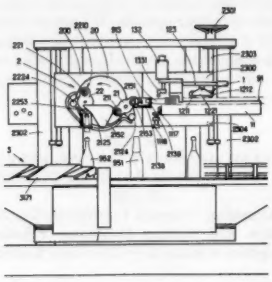
**Rene Lorieux, Cachan, France, assignor to La Societe dite CLISALU, Marevil-Sur-AY, France**

**Filed Oct. 18, 1973, Ser. No. 407,495**

**Claims priority, application France, Oct. 18, 1972, 72.36820**

**Int. Cl. B65b** *7/28;* **B67b** *3/062, 5/00*

**U.S. Cl. 53—307** **15 Claims**



The invention concerns a device for the transfer of sealing capsules as well as equipment for positioning these capsules and feeding a bottle capping machine to operate this device.

The device consists of a hand on which is mounted a nozzle, an arm clamped onto an axle and articulated on the hand, a revolving plate holding the axle loosely mounted; a kinematic linking chain controls the arm but it is disengaged while the capsule is being positioned, the control being then assumed by a cam; a kinematic loose chain (a chain with no connection) maintains the position of the hand, a differential level permitting the introduction of a rotation through 90° by a cam during the positioning of the capsule.

The invention applies to the transfer and placing of sealing capsules.

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**3,837,142**

**HORSE BIT ASSEMBLY**

**Richard S. Hill, 302 W. Steadman, Sherman, Tex. 75090**

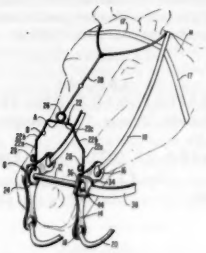
**Filed Aug. 23, 1973, Ser. No. 390,821**

**Int. Cl. B68b** *1/04*

**U.S. Cl. 54—6** **17 Claims**

For controlling and teaching a horse, a bit assembly is provided including a mouth bar adapted to be received in the hor-

se's mouth; and a pair of L-shaped flanges fixed to opposite ends of the mouth bar to be positioned externally of the horse's mouth on opposite sides of the horse's head to limit movement of the mouth bar while in the horse's mouth. The upper ends of the flanges have apertures for attaching straps to fix the position of the bit assembly on the horse's head, while the lower ends of the flanges have apertures for attaching stopping reins or other lines used to control the horse. Riding reins are attached to the bit assembly by means of rings pivotally connected to each of the flanges adjacent opposite ends of the mouth bar. For applying pressure to nerves in the horse's nose or under the horse's jaw, a generally U-shaped swing bar is rotatably mounted to opposite ends of the mouth bar. Rings



are fixed to opposite legs of the swing bar as well as the cross piece for attaching control cords or lines to the swing bar to secure it either across the nose of the horse or under the jaw of the horse depending on the type of control or training wished to be imposed on the horse. Liquid or other medicine may be introduced into the horse's mouth through the mouth bar which is formed with a tubular construction for receiving the liquid; the opposite ends of the mouth bar being provided with screw plugs for closing the mouth bar. When it is desired to introduce liquid into the horse's mouth, either one of the screw plugs is removed, and a liquid supply conduit such as a hose is inserted in the end of the mouth bar. From the interior of the mouth bar, the liquid enters into the horse's mouth by means of an aperture formed in the center of the mouth bar.

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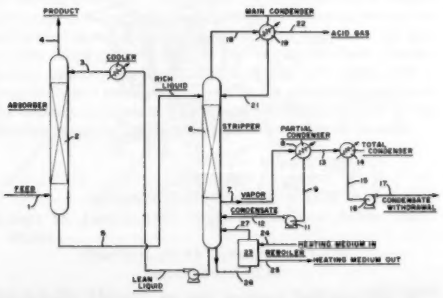
**3,837,143**

## SIMULTANEOUS DRYING AND SWEETENING OF WELLHEAD NATURAL GAS

**John A. Sutherland, Houston, Tex., and John W. Sweny, River Vale, N.J., assignors to Allied Chemical Corporation, New York, N.Y.**

**Filed Aug. 6, 1973, Ser. No. 386,119**
**Int. Cl. B01d** *53/14*
**U.S. Cl. 55—32** **10 Claims**




Simultaneous dehydration and sweetening of natural gas to produce therefrom a purified natural gas having a low dew point and a low sulfur content suitable for passage in gas transmission lines with concomitant production of hydrogen sulfide gas removed from the natural gas and production of water substantially free of impurities removed from the natural gas involving passing a solvent medium comprising a normally liquid dialkyl ether of a polyalkylene glycol ether containing 2 to 15 percent water by weight in direct contact with the natural gas to reduce its $H_2S$ content to less than 10 parts per million and its water content to less than 12 pounds per million standard cubic feet; stripping the hydrogen sulfide from the solvent medium by means of internally generated steam which is generated by externally heating stripped solvent medium; withdrawing a portion of internally generated steam containing a minor amount of solvent; condensing a portion of it together with contained solvent and returning the steam condensate and contained solvent to the stripping zone; condensing and discharging the remaining portion of withdrawn steam and returning lean solvent medium for stripping of natural gas.

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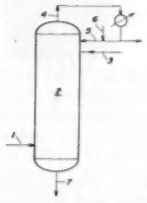
**3,837,144**

## SEPARATION OF ACETYLENE FROM ETHYLENE-BEARING GASES

**John D. Lewis, 35 Pky., Montclair, N.J. 07042**

**Filed Nov. 21, 1972, Ser. No. 308,394**
**Int. Cl. B01d** *53/14*
**U.S. Cl. 55—64** **7 Claims**



An improved process for the separation of acetylene from an ethylene stream derived from cracking. The absorption of acetylene with a solvent is effected under truly isothermal conditions with an excess of recycle ethylene. The enriched solvent is subsequently stripped to recover acetylene.

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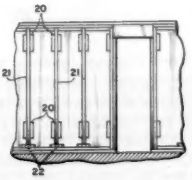
**3,837,145**

## ELECTROSTATIC PRECIPITATOR WALL PANEL

**Theodor T. Festner, 16 Ridge Rd., Upper Saddle River, N.J. 07458**

**Filed July 27, 1972, Ser. No. 275,648**
**Int. Cl. B03c** *3/47*
**U.S. Cl. 55—146** **3 Claims**



An electrostatic environmental precipitator wall panel comprising an electrically conductive metallic sheet disposed between a pair of electrically non-conductive insulation sheets which are bonded together. A decorative outer sheet of

material is affixed to one side of the composite wall panel formed by the bonded insulation and metal sheets. The wall panel may be of rigid planar form, or may be constructed as an accordian fold curtain.

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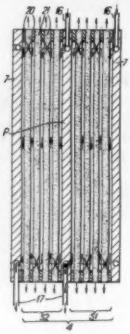
**3,837,146**

## SEPARATING APPARATUS PARTICULARLY SUITABLE FOR GAS PERMEATION AND IN PERVAPORATION

**Alphonse Faure, and Bruno Jamet, both of Rhone, France, assignors to Rhone Poulenc S.A., Paris, France**

**Filed Sept. 7, 1972, Ser. No. 286,703**
**Claims priority, application France, Sept. 9, 1971, 71.32585**
**Int. Cl. B01d** *53/22*
**U.S. Cl. 55—158** **5 Claims**



Separating apparatus, particularly suitable for gas permeation and pervaporaton, such apparatus comprising a plurality of parallelopipedonal frame members having a central cell forming aperture stacked alternately with a plurality of parallelopipedonal membrane members of substantially the same outside dimensions, the membrane members each including two permeable membranes having a porous support interposed therebetween, at least one opening formed in the porous support near one side and extending across between 40 and 90% of the width of the support, with the two membranes secured to one another in a fluid tight manner over a zone within the opening or openings, at least one orifice being formed in the membranes in said zone or zones, the openings of alternate membrane members being on opposite sides of the stack; means for supplying fluid to one end of the stack; means for withdrawing fluid from the other end of the stack; a fluid tight chamber enclosing the stack and means for removing permeate from said chamber.

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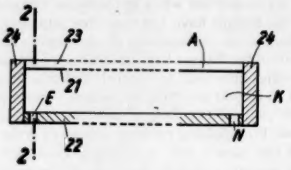
**3,837,147**

## DEVICE FOR SEPARATING MIXTURES OF GASEOUS AND/OR VAPOROUS SUBSTANCES ESPECIALLY FOR SEPARATION OF CARRIER GAS IN DEVICES FOR GASCHROMATOGRAPHY

**Curt Brunnee, 2820 Platjenwerbe, 24 Birkenweg, Germany**

**Continuation of Ser. No. 185,834, Oct. 1, 1971, abandoned.**
**This application Aug. 9, 1973, Ser. No. 386,938**
**Int. Cl. B01d** *15/08*
**U.S. Cl. 55—197** **11 Claims**

The invention relates to a device for separating mixtures of gaseous and/or vaporous substances which comprises a separating chamber for said mixture provided with an inlet for viscous flow, a first exit for molecular flow having the form of an elongated slit wherein the slit width preferably is adjustable, and a second exit for viscous flow, especially for separation of a carrier gas in devices for gaschromatography. (Compare U.S. Pat. application Ser. No. 25,919).



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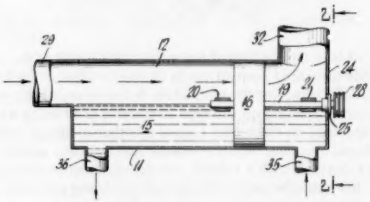
**3,837,148**

## APPARATUS FOR FILTERING FLUE GAS

**Tauno O. H. Mattson, Denver, Colo., assignor to Texaco Inc., New York, N.Y.**

**Filed Feb. 23, 1972, Ser. No. 228,583**
**Int. Cl. B01d** *33/02*
**U.S. Cl. 55—234** **2 Claims**



Flue gas filtering apparatus. It provides structure for having a continuous backwash of the filter by liquid flowing through an immersed portion to remove filtered material without changing the filter. The filter is arranged to rotate into a liquid bath with the flue gas flowing above the surface thereof.

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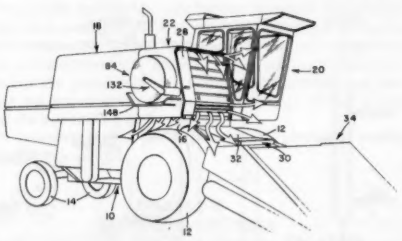
**3,837,149**

## ENGINE ENCLOSURE AND COOLING SYSTEM WITH ROTARY FILTER

**Neil L. West, Bettendorf, Iowa, and James Roger Nelson, Geneseo, Ill., assignors to Deere & Company, Moline, Ill.**

**Filed June 27, 1973, Ser. No. 374,156**
**Int. Cl. B01d** *46/04*
**U.S. Cl. 55—269** **22 Claims**



A self-propelled combine has an elevated transversely oriented engine at the right front of the machine mounted in an engine enclosure having an air inlet on the right sidewall of

the enclosure. a rotating, drum-type screen is mounted over the air inlet for filtering the cooling air moving through the inlet, and a radiator is disposed adjacent to the air inlet in the enclosure. An engine driven fan pulls air through the filtered air inlet, through the radiator, and discharges a substantial portion of the air downwardly along the right sidewall of the combine, another substantial portion of the air through outlets in the lower front wall of the enclosure, directing the air along the top of the feeder house, and a smaller portion of the air through an outlet at the top of the engine enclosure front wall. A partial vacuum chamber is disposed adjacent a section of the peripheral wall of the air filter and adjacent a section of the radial end wall of the air filter, the partial vacuum being created in the chamber by suction from the fan through a conduit connecting the chamber to the fan shroud. The normal inward flow of air through the air filter is reversed in those areas of the filter opposite the vacuum chamber, so that the material filtered out of the cooling air by the filter is sucked off of the exterior of the filter into the vacuum chamber, from where it is pulled through the conduit by the fan and discharged through the air outlets, bypassing the radiator. The right sidewall of the engine enclosure is swingable to an open position wherein it provides access to the radiator and other components in the enclosure, a latch being provided to lock the sidewall in its closed position. An interlock is provided in association with the latch for automatically disengaging the drive to the rotating screen when the sidewall is swung to its open position.

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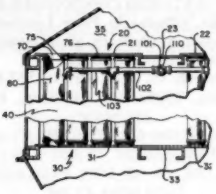
**3,837,150**
**FILTERING APPARATUS WITH PNEUMATIC INTERMITTENT CLEANING**

**John W. Kubiak, Minnetonka, Minn., assignor to The Torit Corporation, St. Paul, Minn.**

**Filed Dec. 8, 1972, Ser. No. 313,582**
**Int. Cl. B01d** *46/04*
**U.S. Cl. 55—272** **5 Claims**



A filtering apparatus employing pneumatic intermittent cleaning in which tubular filter elements are positioned within a tubular enclosure to filter contaminated airflow therethrough. A plurality of nozzles connected to a common manifold are positioned in the tube house adjacent the upper ends of the downstream sides of the filter elements with one nozzle providing a cleaning and agitating action for a plurality of filtering elements. The nozzles are asymmetrically located with respect to the individual filtering elements to provide an efficient shaking of the same to dislodge agglomerated particulate caked on the interior of the filtering elements. The improved apparatus provides for a limited air supply with a predetermined pressure and volume for effective cleaning of the filtering elements to provide for efficient operation of the filtering apparatus and low cost of maintenance of the same.

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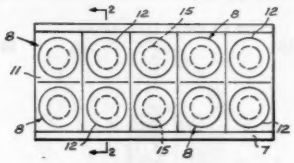
**3,837,151**
**BAGHOUSE DUST COLLECTOR**

**Robert M. Jensen, 1457 Wisteria Dr., Ann Arbor, Mich. 48104**

**Filed Nov. 17, 1972, Ser. No. 307,472**
**Int. Cl. B01d** *46/02*
**U.S. Cl. 55—341** **10 Claims**

This invention is directed to a baghouse dust collector of the top inlet type in which the bags are arranged in a plurality of modules, each of which contains a plurality of pairs of bags. Each bag is mounted within a concentric vertical sleeve or shell and the lower end of each bag is operably connected to the lower end of its associated sleeve through a floating type of gastight joint that adapts to variations in bag lengths. Covered



access openings are provided adjacent the top and bottom of each sleeve for bag installation and removal. Cleaned gas or air is discharged from an intermediate port in each sleeve, which port also is used for the admission of reverse flow cleaning air or gas.

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**ERRATA**

For Classes 56—14, 56—202 and 56—341 see: Patent Nos. 3,837,157, 3,837,158 and 3,837,159

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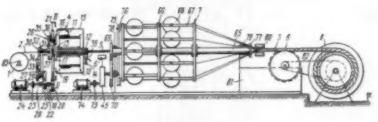
**3,837,152**
**ROPE-TWISTING MACHINE**

**Mark Illarionovich Dakhov, 604 mikroraion, dom 7, kv. 3; Pavel Petrovich Nesterov, ulitsa Sumskaya, 128, kv. 28, both of Kharkov; Alexei Trofimovich Semkin, ulitsa Gastello, 26, Khartsyzsky Donetskoi oblasti; Ljudmila Andreevna Alexeeva, ulitsa Kosmicheskaya, 16, kv. 22; Arkady Zinovievich Sakhnovsky, ulitsa Kitaenko, 4, kv. 62, both of Kharkov; Ivan Timofeevich Skrypnik, ulitsa Tikhomirova, 9/3, kv. 190, Moscow; Lev Lvovich Klimovsky, ulitsa Kitaenko, 3b, kv. 11, Kharkov, and Viktor Alexandrovich Miroshnichenko, ulitsa Dnepropetrovskaya, 18, kv. 12, Dnepropetrovsk, all of U.S.S.R.**

**Filed Nov. 26, 1973, Ser. No. 418,846**
**Int. Cl. D07b** *3/04, 3/06*
**U.S. Cl. 57—9** **2 Claims**



A rope forming machine in which consecutively installed between a reel holding a core of fibrous material and a rotor circumferencially mounting a plurality of wire reels for holding the outer strands of the rope is a spring forming mechanism for forming wire into a cylindrical spring which is used to surround the core brought off the core-holding reel and a device for determining the extent of tensioning of the cylindrical spring with the core enclosed therein after emerging from the spring forming mechanism. The rotational speed of the rotor and a drawing-off drum for drawing off the finished rope formed by twisting the strand around the formed cylindrical spring are controlled, to correlate the rate or rope twisting and that of cylindrical spring forming.

## 3,837,153

## METHOD OF AND APPARATUS FOR PRODUCING FINISHED OPEN END YARN IN A SPINNING CHAMBER

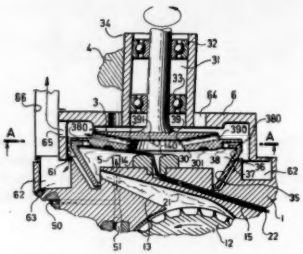
Stanislav Didek, and Jaroslav Storek, both of Usti Nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Ustinad Orlici, Czechoslovakia

Filed Nov. 5, 1973, Ser. No. 412,559

Claims priority, application Czechoslovakia, Nov. 6, 1972, 7444-72

Int. Cl. D01h *1/12, 13/30*

U.S. Cl. 57—35 14 Claims



Method of and apparatus for producing finished open-end yarn in a spinning chamber. A finishing material, for instance dyestuff, is fed into the spinning chamber, which is provided with a collecting surface for depositing fiber and with a take-off opening for taking-off yarn. The finishing material, for instance dyestuff, is applied to the yarn between the collecting surface and the take-off opening by friction of the yarn against a rotating application surface, the dyeing-through of the yarn being accomplished by penetration of twists of the yarn in the direction towards the collecting surface.

## 3,837,154

## SPINNING TURBINE

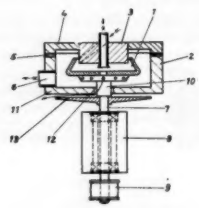
Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Wilhelm Stahlecker GmbH, near Geislingen, Steige, Germany

Filed Jan. 27, 1972, Ser. No. 221,203

Claims priority, application Germany, Jan. 27, 1971, 2103717

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.89 46 Claims



A spinning turbine arrangement of the type having a spinning turbine indirectly supported in a casing under subatmospheric pressure. Air conveying means are provided for preventing leakage air from passing into the casing alongside the necessarily large bore for the turbine shaft. These air conveying means can also operate to evacuate or assist in evacuating the casing. The air conveying means may include rotating fan-like or thread-like parts attached to the turbine or turbine shaft. Also rotating air conveyors can be attached to the turbine or turbine shaft. Also rotating air conveyors can be attached to the axles of back-up rolls or the back-up rolls themselves may be constructed as fans. These rotating parts can be either inside or outside of the casing rear wall through which the turbine shaft extends. Air outlet apertures are provided in this rear wall to accommodate the various rotation of the fan and like parts. Also provisions for quick and easy disassembly of the spinning turbine are built into the arrangement with such devices as clip-in inserts and the like.

## 3,837,155

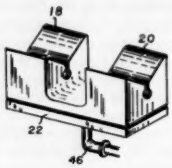
## PNEUMATIC FALSE TWIST INTERLACED YARN

Neil E. Lloyd, and Walter B. Mather, III, both of Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 42,404, June 1, 1970, Pat. No. 3,775,958. This application Nov. 2, 1971, Ser. No. 194,850

Int. Cl. D02g *3/24*

U.S. Cl. 57—140 R 6 Claims



Apparatus for interlacing a filament yarn to give it compactness and other characteristics of a twisted yarn comprising a pair of spaced oppositely functioning pneumatic false twisters with the downstream twister having a smaller yarn passage than the upstream twister.

## 3,837,156

## PROCESS FOR PRODUCING MOLECULARLY ORIENTED, TEXTURED CONTINUOUS FILAMENTS

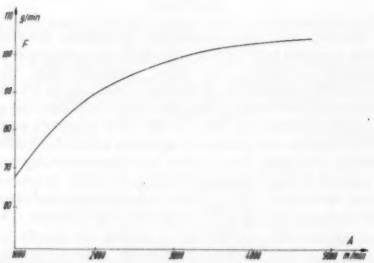
Helmut Langanke, Offenbach; Peter Landenberger, Hanau, and Georg Treutel, Kelsterbach, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft

Filed Feb. 15, 1973, Ser. No. 332,826

Claims priority, application Germany, Feb. 17, 1972, 2207849

Int. Cl. D02g *1/02*

U.S. Cl. 57—157 TS 2 Claims



Molecularly oriented, textured continuous filaments are made from thermoplastic materials by

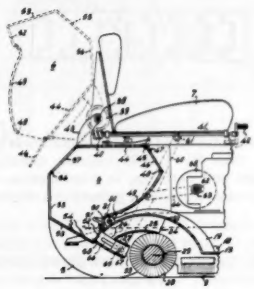
a. spinning continuous filaments from a multi-orifice spinneret and drawing the filaments therefrom without deforming same at a speed of at least 2,500 meters per minute to a residual elongation at break of not greater than 200%; thereafter

b. crimping the prestretched filaments from (a) and further stretching same to a residual elongation by a false-twisting step carried out in the first heating passage of a texturing device.

## 3,837,157
## DEVICES FOR PICKING UP MATERIAL LYING ON THE GROUND

Cornelis Van Der Lely, 7 Bruschenrain, Zug, Switzerland

Filed Dec. 26, 1972, Ser. No. 318,245
Claims priority, application Netherlands, Dec. 27, 1971, 7117853
Int. Cl. A01d 35/26
U.S. Cl. 56—14.5 40 Claims

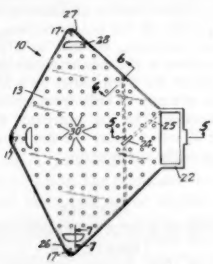


A device for picking up material lying on the ground includes a wheeled frame with brushes and/or mowing elements rotatably mounted below the frame to urge material rearwardly. A collecting trough is pivoted at its upper aspect to the device and movable from an operating collecting position to a discharge position. A channel communicates between a pick-up brush and the trough to extend the length of the brush, across the width of the frame to pass material back to the trough. An eccentric is connected to reciprocate a piston that forces the material into the trough through at least one movable flap. The eccentric is driven by a motor which also propels the device.

## 3,837,158
## GRASS CATCHER FOR ROTARY MOWER

Joe Leader, 915 West 34th St., Minneapolis, Minn. 55426

Filed July 9, 1973, Ser. No. 377,787
Int. Cl. A01d 35/22
U.S. Cl. 56—202 11 Claims

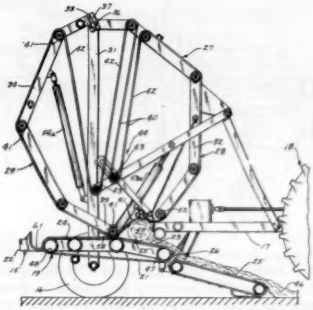


Shown herein is a generally diamond-shaped container having a divider member pivotally mounted within its inlet and cooperating with an upwardly extending deflector at the bottom to direct the grass clippings from the discharge of a rotary mower to the more remote portions of the container. A handle member adjacent the inlet also serves to attach the container to the rotary mower in receiving relation.

## 3,837,159
## MACHINE FOR FORMING A ROUND BALE OF A WINDROWED MATERIAL

Gary J. Vermeer, Box 200, Pella, Iowa 50219

Filed Nov. 23, 1973, Ser. No. 418,554
Int. Cl. A01d 39/00
U.S. Cl. 56—341 4 Claims

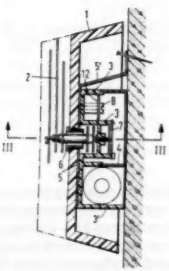


The invention provides a machine for making large round bales wherein hay is delivered to one end of a horizontal conveyor and rolled thereon in a bale forming zone by a series of roller-supported continuous belts. A lower roller for the series of belts is movable to progressively expand the bale forming zone in response to the progressive enlargement of a bale being formed. This movement of the lower roller takes place in a path longitudinally of and adjacent the upper surface of the horizontal conveyor to a completed bale forming position wherein the roller is located outwardly from but adjacent to the other end of the conveyor with the lower side portion thereof located below the upper surface of the conveyor. The series of belts at the lower roller are thus in a continuous adjacent working clearance with the conveyor whereby hay dropping onto the conveyor is continuously fed into the bale forming zone and prevented from being carried below such roller for discharge to the ground.

## 3,837,160
## BATTERY DRIVEN CLOCK WITH A SELF-REGULATING ESCAPEMENT SYSTEM AND A PLASTICS MATERIAL HOUSING

Hugo Hettich, 7762 Ludwigshafen, Bodensee, Germany

Continuation of Ser. No. 172,397, Aug. 17, 1971, abandoned.
This application July 2, 1973, Ser. No. 375,717
Int. Cl. G04c 21/16; G04b 13/02
U.S. Cl. 58—19 R 12 Claims

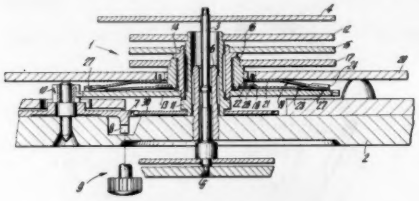


A battery-powered clock with a self-regulating escapement system and a plastic housing comprises a plastic capsule, directly connected with the clock housing, and accommodating the clockwork parts directly.

## 3,837,161
## UNIVERSAL TIME WATCH

**Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.**

**Filed Dec. 26, 1973, Ser. No. 428,149**
**Int. Cl. G04b *19/22*; G04d *27/00***
**U.S. Cl. 58—42.5** **5 Claims**

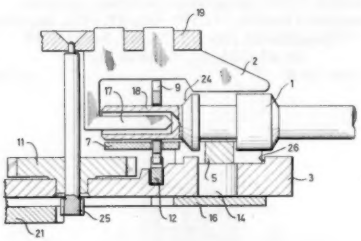


A horological device with a regular hour hand and including an auxiliary hour hand for indicating a different time zone than the local time. The auxiliary hour hand is connected to the regular hour hand through a coupling member permitting relative rotation between the regular hour hand and the auxiliary hour hand when the crown is rotated in one direction and permitting normal setting of the hour hand and minute hand, with the auxiliary hour hand moving in unison, when the crown is rotated in the opposite direction. The coupling member is normally driven by the hour wheel through a peripheral friction coupling, and is held in place during setting of the auxiliary hour hand by a one-way ratchet utilizing weak radial spring arms.

## 3,837,162
## DEVICE FOR ADJUSTING THE DIAL TRAIN OF WATCHES

**Heinz Meitinger, Theodor-Heuss-Str. 16 D-7075, Mutlangen, Germany**

**Division of Ser. No. 272,693, July 7, 1972, abandoned. This application Mar. 26, 1973, Ser. No. 334,625**
**Claims priority, application Germany, Aug. 6, 1971, 2139429**
**Int. Cl. G04b *27/02***
**U.S. Cl. 58—67** **2 Claims**



A setting mechanism for wrist-watches which serves for adjusting the dial train carrying the minute and hour indicating hands. The function is achieved by a setting stem which is provided with a bearing recess and carried on a projecting portion which is rigidly mounted on the movement frame. The setting wheel for setting the dial train is carried on the setting stem and movable in axial direction relative to the setting stem. The setting wheel is positioned by the setting lever which serves, in connection with the set stem lever, as a clutch-like arrangement.

## 3,837,163
## HARD METAL WATCH BAND

**Yoshiaki Fujimori, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan**

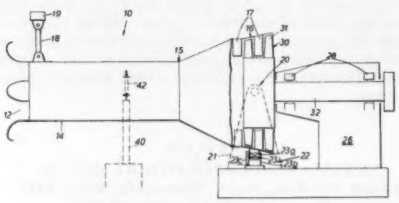
**Filed Dec. 13, 1972, Ser. No. 314,627**
**Claims priority, application Japan, Dec. 14, 1971, 46-100669**
**Int. Cl. F16g *13/00***
**U.S. Cl. 59—80** **9 Claims**

A mar-proof watch-band is made of materials having a hardness greater than Hv 1,000. Suitable materials are hard nitrides, oxides and carbides, in combination with metallic binders. Such materials may be ground to a mirror-finish.

## 3,837,164
## INDUSTRIAL GAS TURBINE POWER PLANT MOUNTING APPARATUS

**William Reginald Carr, Rugby, England, assignor to Rolls-Royce (1971) Limited, London, England**

**Filed May 21, 1973, Ser. No. 362,058**
**Claims priority, application Great Britain, May 24, 1972, 24328/72**
**Int. Cl. F02c *3/10***
**U.S. Cl. 60—39.16 R** **3 Claims**



An industrial gas tubine power plant consists of a gas generator having a compressor, combustion equipment and a compressor driving turbine, and a power turbine. The stator casing of the power turbine is attached to the gas generator and the rotor portion of the power turbine is mounted independently in an overhung manner in a pedestal. The gas generator is mounted at the rear on a pair of trunnions on the stator casing and at the front either by a link attached to an overhead frame or a pair of links from a column on each side of the gas generator. The gas generator also has a central locating device mounted under the stator casing to centralise radial expansion of the stator casing.

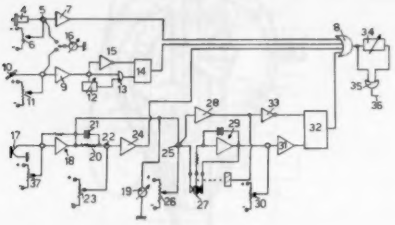
## 3,837,165
## AUTOMATIC DEVICE FOR CONTROLLING CATALYTIC MUFFLERS

**Virgilio Arrigoni, San Donato Milanese; Bruno Gaetani, Milano; Gianfranco Marchesi, and Gianfranco Zanoni, both of San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy**

**Filed Sept. 7, 1972, Ser. No. 287,009**
**Claims priority, application Italy, Sept. 10, 1971, 28446/71**
**Int. Cl. F02b *75/10***
**U.S. Cl. 60—277** **6 Claims**

A device for automatically controlling a by-pass electrovalve of a catalytic muffler comprising three inlet stages, the

first inlet stage is responsive to the speed or number of engine revolutions, the second inlet stage is responsive to the throttle position and includes a retarding circuit and store, and the third inlet stage is responsive to the temperature of the catalyst and includes means for comparing the temperature of



the catalyst with a maximum allowable temperature ($T_{MAX.}$) and a predetermined running temperature ($T_s$). The three inlet stages are electrically coupled to an outlet stage which includes a timer for producing a pulse of predetermined duration.

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**3,837,166**

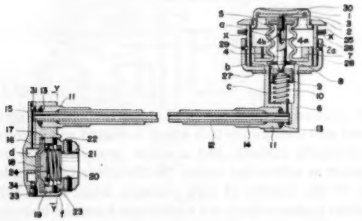
**APPARATUS FOR TRANSMITTING FORCE BY HYDRAULIC PRESSURE**

**Kingo Hiraoka, Tokyo, Japan, assignor to Koito Industries, Ltd., Kanagawa-ken, Japan**

**Continuation of Ser. No. 169,771, Aug. 6, 1971, abandoned. This application July 19, 1973, Ser. No. 380,617**

**Int. Cl. F15b** *7/00*

**U.S. Cl. 60—533** **9 Claims**



A hydraulic pressure transmitter is connected by a flexible tube to a hydraulic actuator. The transmitter has a flexible bellows, with a closed outer end, whose interior defines a first chamber, has a cylinder, and has a piston reciprocable in the cylinder and defining therewith a second chamber, communicating with the bellows, and a third chamber communicating with the tube. The closed outer end of the bellows has a pressure plate thereon which is engaged by an operating button which can be depressed to collapse the bellows. A piston rod is secured to the closed bellows end and extends through a perforated rigid diaphragm into the second chamber, the inner end of the piston being shaped to sealingly engage in an aperture in an end wall of the piston. The piston is biased toward the piston rod by a spring, and has a small clearance with the cylinder walls for flow of hydraulic fluid therepast between the second and third chamber parts.

**3,837,167**

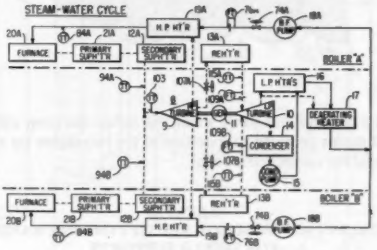
**CONTROL SYSTEM FOR A TWO BOILER, SINGLE TURBINE GENERATOR POWER PRODUCING UNIT**

**Oliver W. Durrant, Akron, and John William Smith, Massillon, both of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.**

**Filed June 7, 1973, Ser. No. 367,775**

**Int. Cl. F22b** *35/00*; **F01b** *27/00*

**U.S. Cl. 60—664** **14 Claims**




A coordinated control system for a power producing unit consisting of two, single reheat steam generators supplying steam to a single turbine-generator.

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**3,837,168**

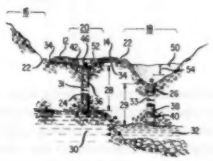
**DRAINAGE SYSTEM**

**Dietrich Anselm Alsberg, and Glenna Rose Alsberg, both of 60 Princeton Ave., Berkeley Heights, N.J. 07922**

**Filed June 18, 1973, Ser. No. 371,287**

**Int. Cl. E02b** *11/00*

**U.S. Cl. 61—10** **15 Claims**



A drainage system for reducing flooding simultaneously with recharging underground water supplies includes structures such as dry wells which connect to underground water sources, water conveying means for conveying water to the structures and storage basins for providing temporary storage of excess water until it can be handled by the structures.

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**3,837,169**

**REINFORCED MATTRESS FOR PROTECTING SHORELINES AND THE LIKE**

**Bruce A. Lamberton, 310 Rowan Dr., Berea, Ohio 44017**

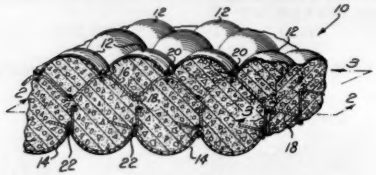
**Filed Oct. 10, 1972, Ser. No. 296,348**

**Int. Cl. E02b** *3/12*

**U.S. Cl. 61—38** **16 Claims**

A pair of sheets of flexible material are interconnected at a plurality of spaced points by a cord system comprising elongated flexible intersecting cord means with the cord means extending between the two sheets and with means interconnect-

ing at least some of the intersecting portions of the cord means whereby a form constructed in this manner may be injected



with a cementitious slurry which will inflate the form with the cord means permitting separation of the two sheets for a substantial but controlled amount.

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**3,837,170**

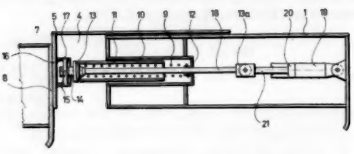
**SEALING AND POSITION RECTIFYING MECHANISM FOR SHIELD SUPPORTS**

**Matyas Martinko, Varpalota; Ferenc Martos, and Titusz Jutas, both of Budapest, all of Hungary, assignors to Banyaszati Kutato Intezet, Budapest; Varpalotai Szenbanyak, Varpalota and Orszagos Banyagepgyarto Vallalat, Budapest, all of, Hungary, part interest to each**

**Filed Mar. 6, 1972, Ser. No. 232,101**

**Int. Cl. E21d *15/44***

**U.S. Cl. 61—45 D** **1 Claim**



A shielding and breaking unit for long wall working in coal mines, comprises a plurality of endwise aligned units having interconnected base plates and shielding and breaking units that are articulately interconnected to the base plates and to each other. The shielding and breaking units are vertically swung by means of hydraulic jacks. The various shielding and breaking units are spring-urged into engagement with each other and have working surfaces that slidably overlie each other.

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**3,837,171**

**INFLATABLE UNDERWATER STRUCTURE**

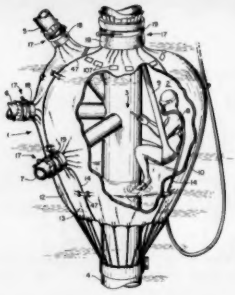
**John T. Scurlock, 6209 Schovest, Metairie, La. 70003**

**Continuation of Ser. No. 112,861, Feb. 5, 1971, abandoned, which is a continuation-in-part of Ser. No. 843,543, July 22, 1969, abandoned. This application Apr. 10, 1973, Ser. No. 349,709**

**Int. Cl. B63c *11/36*; E04b *1/343***

**U.S. Cl. 61—69 R** **18 Claims**

An inflatable underwater structure for providing an artificial environment around a work area, for example, at the subsea base of an off-shore oil platform, permitting such work as welding and the like; the structure is made up of one integral sheet of material for a custom job or a series of selected sheets fastened together about the structural support members; the material includes zippered sections so that the material can be placed about and around the structural members; in order to insure a substantially air-tight system, neck sealing means are included about the structural members at their intersection



with the sheet material as well as air-tight means within the zippered sections; although the system could be used on land, it is particularly applicable to sub-sea situations.

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**3,837,172**

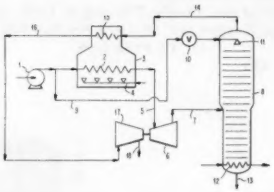
**PROCESSING LIQUEFIED NATURAL GAS TO DELIVER METHANE-ENRICHED GAS AT HIGH PRESSURE**

**Stephen J. Markbreiter, Edison, and Irving Weiss, Brooklyn, both of N.Y., assignors to Synergistic Services Inc., New York, N.Y.**

**Filed June 19, 1972, Ser. No. 263,983**

**Int. Cl. F25j *3/02***

**U.S. Cl. 62—24** **10 Claims**



Liquefied natural gas is pumped to high pressure and divided into a major portion which is heated and introduced into a rectifying column and a minor portion which enters the column as subcooled reflux. Methane-enriched gas leaves the top of the column at high pressure while liquid ethane and heavier hydrocarbons are withdrawn from the bottom thereof. When the methane-enriched gas is to be delivered at a pressure above the critical pressure of the gas in the column, the heated major portion is expanded with the performance of work before being introduced into the column; the work thus performed is utilized to compress the methane-enriched gas to a pressure above that in the column.

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**3,837,173**

**ACCUMULATOR WITH REFRIGERANT LEVEL INDICATING MEANS**

**Gary W. Kuttruff, North Syracuse, and Raymond F. Durham, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.**

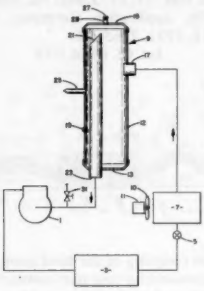
**Filed Mar. 29, 1973, Ser. No. 346,217**

**Int. Cl. F25b *43/00***

**U.S. Cl. 62—128** **1 Claim**

A dead-end tube extending from the side wall of the accumulator in a flooded evaporator refrigeration system having a

fixed expansion device, for indicating the level of liquid refrigerant in the accumulator to facilitate the charging of the system. The tube is located at a position coincident with the liquid refrigerant level in the accumulator existing when the



system has an optimum charge of refrigerant at predetermined operating conditions. To charge the system, it is run at the predetermined operating conditions while adding refrigerant, until the tube sweats or frosts over to indicate that the liquid level has reached the tube.

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**3,837,174**

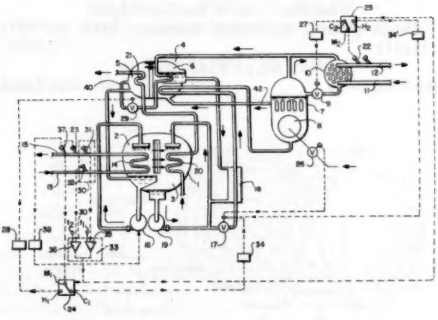
**CONTROL DEVICE FOR AN ABSORPTION SYSTEM HOT AND COLD WATER SUPPLY APPARATUS**

**Tatsuo Miyagi, and Shigeru Sakata, both of Oizumicho, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan**

**Filed Mar. 16, 1973, Ser. No. 341,900**

**Int. Cl. F25b *15/06***

**U.S. Cl. 62—141** **5 Claims**



A control device for an absorption system hot and cold water supply apparatus for regulating its refrigerating and heating capacity in order for it to supply hot water and cold water simultaneously corresponding to the loads of hot and cold water, including main and auxiliary proportional controllers, a load detector, changeover switches and devices and apparatus having thermo-control capacity. The complete refrigerant circuit of the apparatus being controlled by the main proportional controller selected by changeover switches owing to the load detector, and at a given time either the hot water circuit or the cold water circuit being controlled by the auxiliary proportional controller connected to one of the circuits independently from the control of the complete refrigerant circuit owing to the main proportional controller.

**3,837,175**

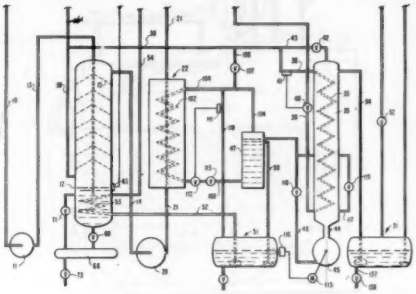
**REFRIGERATION SYSTEM HAVING IMPROVED HEAT TRANSFER AND REDUCED POWER REQUIREMENTS**

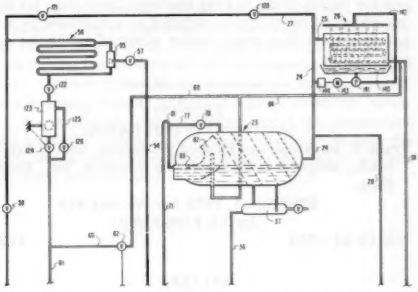
**Bruce D. Miller, Louisville, Ky., assignor to Refco, Inc., Jeffersontown, Ky.**

**Filed Oct. 9, 1973, Ser. No. 404,224**

**Int. Cl. F25b *31/00***

**U.S. Cl. 62—192** **23 Claims**





A refrigeration system employing oil-lubricated compressors has an improved arrangement for removing oil from the refrigerant, and by use of a liquid pump and with utilization of by-product heat from the compressed gas, is enabled to operate with reduced power consumption.

In addition, oil-removing apparatus adapted for installation in conventional refrigeration systems, and an improved defrosting arrangement utilizing oil-free gas, are disclosed.

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**3,837,176**

**REFRIGERATED HOPPER EQUIPMENT FOR AUTOMATIC RIVETING MACHINES**

**George I. Baxter; Clarence P. Rolla, both of San Diego, and Charles L. Holland, Escondido, all of Calif., assignors to General Dynamics Corporation, San Diego, Calif.**

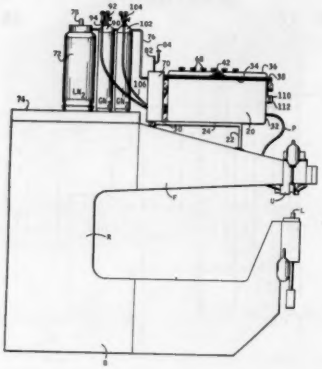
**Filed Aug. 2, 1972, Ser. No. 277,438**

**Int. Cl. F25b *41/04***

**U.S. Cl. 62—225** **8 Claims**

A refrigerating apparatus enclosing the rivet hoppers of an automatic riveting machine. A refrigerant such as liquid nitrogen is conducted into the refrigerant coils of an insulated enclosure to maintain the temperature of the rivets in the hoppers at sub-zero temperature in order to retard the age hardening process. Frost formation on the rivets is effectively prevented by purging the enclosure with gaseous nitrogen. Upon passing through the coolant coils, the nitrogen absorbs

sufficient heat to convert it from the liquid state to a gaseous state. The gas then discharges from the open end of the coils into the enclosure and through a vent in the side wall of the enclosure to atmosphere. To augment frost prevention, dry



nitrogen gas is utilized to propel the rivets from the hoppers into the fingers of the riveting machine. Down time for servicing, changing rivets, etc. is reduced to a minimum by a temperature controlled space heater mounted inside the enclosure.

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**3,837,177**

## SUCTION ACCUMULATOR

**Frank H. Rockwell, and Edward W. Bottum, both of Brighton, Mich., assignors to Refrigeration Research, Inc., Brighton, Mich.**

**Filed Nov. 1, 1973, Ser. No. 411,913**
**Int. Cl. F25b *43/00***
**U.S. Cl. 62—503** **4 Claims**

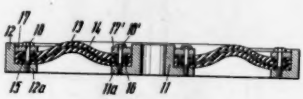
The suction accumulator of the invention is designed for use with the suction or compression side of a refrigeration system. The accumulator comprises a casing having an inlet and an outlet. An outlet tube structure is provided within the casing connected to an outlet from the casing. The outlet tube structure includes an outer tube and an inner tube of smaller diameter positioned therewithin. This structure extends from a point adjacent the bottom of the casing to the casing outlet and acts as a suction device to draw liquid from the casing and expel it into the casing outlet at a metered rate.

**3,837,178**

## FLEXIBLE SHAFT COUPLING

**Bernhard Hackforth, and Josef Hackforth, both of Wanne-Eickel, Germany, assignors to Vulkan Kupplungs-und Getriebau Bernhard Hackforth, Wanne-Eickel, Germany**

**Filed Mar. 19, 1973, Ser. No. 342,613**
**Claims priority, application Germany, Mar. 23, 1972, 2214093; Nov. 14, 1972, 2255680**
**Int. Cl. F16d *3/78***
**U.S. Cl. 64—13** **10 Claims**



A flexible shaft coupling of the kind comprising a hub part and a co-axial surrounding ring part connected together by a flexible annular disc which is reinforced by one or more reinforcing inserts of textile or synthetic yarn or of wire the inner and outer edges of which are wrapped around stiffening rings near the inner and outer peripheries of the disc has the outer stiffening ring, and preferably the inner stiffening ring also, formed of strip-like material, the stiffening ring or rings thus being of flattened cross-section with the greater lateral dimension lying in the plane of the disc, so that the ring has a greater bending stiffness in a direction radially of the disc than in a direction axially of the disc. Preferably the stiffening rings are provided with axial holes and the inner and outer peripheral portions of the disc are clamped to the hub part and the surrounding ring part by means of clamping rings and clamping bolts which pass through holes in the clamping rings and through the axial holes in the flattened stiffening rings.

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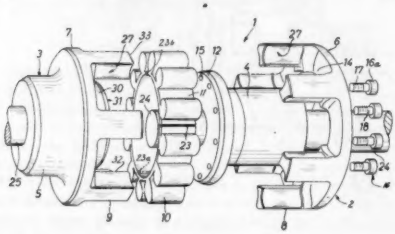
**3,837,179**

## FLEXIBLE COUPLING

**Harald Barth, Hermannstrasse 103, Neunkirchen, Saar, Germany**

**Filed Mar. 7, 1973, Ser. No. 338,901**
**Claims priority, application Germany, Mar. 10, 1972, 2211512**
**Int. Cl. F16d *3/64***
**U.S. Cl. 64—14** **39 Claims**

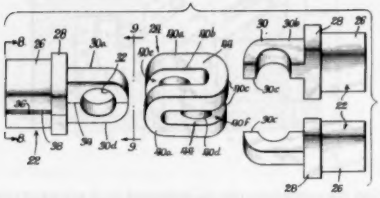


A flexible coupling wherein the jaws of one flange are normally interdigitated with the jaws of the other flange to form substantially cylindrical chambers for reception of elastically deformable cylindrical inserts which transmit torque between the flanges when one flange rotates to drive the other flange. At least one of the flanges has a hub and a rim which is separably connected to the hub by screws and can be moved, upon removal of screws, with the respective jaws in a direction away from the jaws of the other flange to thus permit convenient withdrawal of the inserts. The inserts are connected to a split ring which can pass over the hub when the latter is separated from the rim.

## 3,837,180
## ANGULAR COUPLING

Roger H. Mitchell, 5809 36th Ave., Kenosha, Wis. 53140

Filed July 20, 1972, Ser. No. 273,433
Int. Cl. F16d 3/26
U.S. Cl. 64—17 R 11 Claims

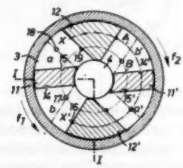


An angular coupling made up of three main parts — a pair of end pieces having loops interlocked in mutually transverse positions, and a double reverse-turn continuous center piece forming linear elements respectively positioned in the concave corners formed by the interlocked loops, whereby the loops and linear pieces together form a circumferentially continuous series of interengaging elements through which the torque is transmitted.

## 3,837,181
## ROTARY COUPLING DEVICE IN WHICH THE TRANSMITTED SPEED OF ROTATION IS INCREASED PROGRESSIVELY

Arthur-Andre Leuenberger, Geneve, Switzerland, assignor to Relma S. A., Geneva, Switzerland

Filed Dec. 12, 1972, Ser. No. 314,378
Claims priority, application Switzerland, Dec. 23, 1971, 18866/71
Int. Cl. F16d 3/80, 7/00, 43/20
U.S. Cl. 64—26 10 Claims

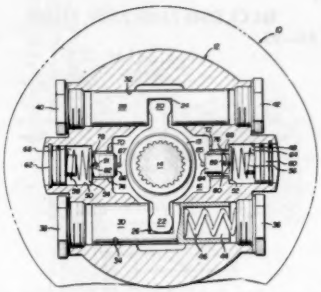


A rotary coupling device in which the transmitted speed is increased progressively, of the type having a case and a shaft axially extending therein defining an annular chamber filled with fluid, at least one driving vane connected to rotate with a driving shaft and extending radially between the inner lateral wall of said chamber and the lateral wall of the axial shaft and axially between the two end walls of the case to form an inner partition wall in the annular chamber, and at least one corresponding driven vane connected to the driven shaft and forming an inner partition wall in said annular chamber. The two corresponding vanes divide the annular chamber into two complementary spaces, and the driven shaft is normally driven positively by the driving shaft by contact between the vanes.

## 3,837,182
## DRIVE LINE DAMPER

Joseph T. Kulhavy, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Aug. 20, 1973, Ser. No. 389,822
Int. Cl. F16d 3/80
U.S. Cl. 64—26 16 Claims

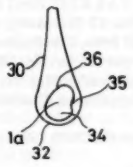


A damper system which connects a flywheel and drive shaft combines a continuous, closed hydraulic system with a mechanical spring arrangement to absorb and eliminate vibrational forces generated at low engine speeds. A force transmitting member in the form of a hub is connected to the drive shaft for rotation therewith and is biased by the combination hydraulic-spring damper to permit relative rotational movement. A centrifugally operated valve blocks the continuous, closed hydraulic system at full engine operation to lock the damper and thereby eliminate any relative movement between the flywheel and drive shaft.

## 3,837,183
## THREAD GUIDES HAVING RESTRICTED APERTURES FOR USE IN WARP KNITTING MACHINES

Karl Kohl, 10 Chlorodont Strasse, Obertshausen, Germany (6053)

Filed May 29, 1973, Ser. No. 364,598
Claims priority, application Germany, May 29, 1972, 2226000
Int. Cl. D04b
U.S. Cl. 66—86 R 4 Claims

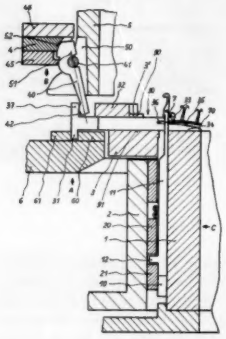



There are provided thread guides of novel structure having a protuberance in the plane of the head portion of the thread guide extending into the aperture of the eyelet portion whereby the radius of curvature of a thread passing through the eyelet during the working of the warp knitting machine is substantially increased.

## 3,837,184
## KNITTING MECHANISM FOR PRODUCING PILE FABRIC

**Wittich Meyerhuber; Werner Koblitz, and Hans Joachim Suppe, all of Ingolstadt, Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany**

**Filed Aug. 28, 1972, Ser. No. 284,067**
**Claims priority, application Germany, Aug. 28, 1971, 2143257**
**Int. Cl. D04b** *15/06, 27/04, 35/100*
**U.S. Cl. 66—93** **8 Claims**



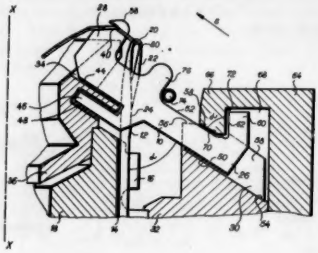
Pile material is interlaced into a basic mesh backing, particularly on a circular knitting machine having means for controlling the retraction and extension of linearly reciprocable sinkers including a pair of cam following ears on each cooperating sinker. One sinker ear can control retraction of the sinker, and the other ear controls sinker extension. The sinker includes a pile loop-engaging hook above and outward from the sinker throat, the degree of sinker retraction determining the depth of the pile loop. The sinker-retracting cam ring is segmented to permit repositioning to change the pile depth by turning a pile depth-setting knob, and such cam ring operates a pivotable cam lever extending between the cam ring and the sinker retraction ear. The lever opposite ends comprise a follower and a camming surface respectively.

## 3,837,185
## METHOD AND APPARATUS FOR FORMING LOOPS IN CIRCULAR KNITTING MACHINES

**Milan Havranek, No. 12 Sramkova, and Ivan Musil, No. 24 Brozikova, both of Brno, Czechoslovakia**

**Continuation-in-part of Ser. No. 105,851, Jan. 12, 1971, abandoned. This application May 31, 1973, Ser. No. 365,573**
**Claims priority, application Czechoslovakia, Jan. 16, 1970, 330-70**
**Int. Cl. D04b** *15/06, 15/24*
**U.S. Cl. 66—107** **5 Claims**

A circular knitting machine having a needle cylinder in which a plurality of needles are operable in a predefined direction. Sinkers are located between the needles and means for operating the cylinder, needles and sinkers in combination to form loops is provided. The sinkers are each formed with a head and a heel end and are mounted respectively in slots formed in a circle located on the exterior of the cylinder and a cam ring mounted on the interior of the cylinder. The slots mounting the sinkers are obliquely directed in the path of movement of the needles and the sinkers are guided by the cams to move in this oblique path with the head end in constant position with respect to the needles. The needles and the

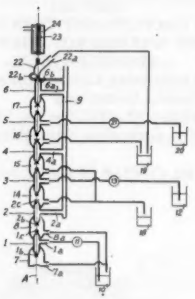


sinkers are synchronously reciprocated so that part of the loop is formed by the needles and part is formed by the movement of the sinkers.

## 3,837,186
## APPARATUS FOR THE CONTINUOUS TREATMENT OF THREADS

**Michel S. M. Lefebvre, Saint-Quentin, and Jean-Claude M. L. Hennion, Arly, both of France, assignors to Omnium De Prospective Industrielle, Saint-Quentin, France**

**Division of Ser. No. 107,166, Jan. 18, 1971, Pat. No. 3,724,088. This application Nov. 20, 1972, Ser. No. 307,763**
**Claims priority, application France, Jan. 21, 1970, 70.02183**
**Int. Cl. B05c** *9/08*
**U.S. Cl. 68—3 SS** **12 Claims**



This invention relates to a process for squeezing and/or drying a humid thread, particularly a textile thread, in the course of a treatment, such as dyeing, effected continuously on said thread during the rectilinear displacement thereof, wherein the humid thread is passed into a zone traversed by a current of air at a pressure much lower than the pressure prevailing about the thread during the operation having provoked its humidification. The invention also relates to an apparatus for continuously treating a thread, for example a textile thread, applying the process as described hereinabove.

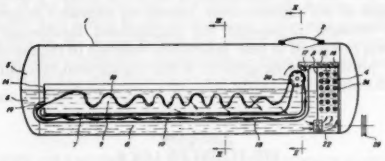
## 3,837,187
## APPARATUS FOR THE WET TREATMENT OF CLOTHS

**Isidro Folch Trullas, Tarrasa, Spain, assignor to Argelich, Termes y C[a]. Sociedad Anonima, Barcelona, Spain**

**Filed Aug. 3, 1973, Ser. No. 339,467**
**Claims priority, application Spain, Mar. 29, 1972, 402434**
**Int. Cl. B05c** *3/172*
**U.S. Cl. 68—15** **7 Claims**

An apparatus for the wet treatment of cloths in rope form comprising a hermetically sealed vessel having a liquid pump-

ing compartment and a treatment compartment through which the cloth circulates drawn along by the treatment liquid, the treatment compartment being divided into two subcompartments, the cloth circulating through the lower subcompartment on the outward run inside a longitudinal duct connected at its ends respectively with the header portion of the pumping compartment and the upper subcompartment



through which the cloth passes on the return run; at the end of the return run a winch draws the cloth from the bath and returns it to the longitudinal transport duct where it is drawn along by the difference of liquid level between the header section of the pumping compartment and the upper level in the treatment compartment, said level difference being caused in use by pumping means housed in said pumping compartment.

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**3,837,188**

**APPARATUS FOR WET TREATMENT AND SUBSEQUENT DRYING OF A TEXTILE WEB**

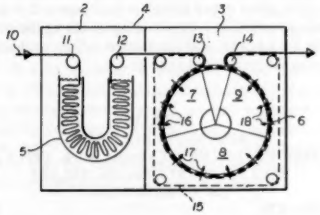
**Manfred Schuierer, Erbach/Odenwald, Germany, assignor to Bruckner-Apparatebau Michelstadt GmbH, Erbach/Odenwald, Germany**

**Division of Ser. No. 125,177, March 17, 1971, Pat. No. 3,730,679. This application Feb. 16, 1973, Ser. No. 333,183**

**Claims priority, application Germany, Apr. 2, 1970, 2015759; Feb. 25, 1971, 7107117[U]**

**Int. Cl. B05c** *9/14*

**U.S. Cl. 68—20** **4 Claims**



A process for wet treatment of fabric web including steps of washing and shrinking, liquid removal, drying, and airing, in which shrinking takes place during the washing before the web is laid evenly on transport means for drying. Apparatus for carrying out the process provides essential treatment stations and drum transport means for conveying the web to be treated through each of the successive stages of treatment.

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**3,837,189**

**PADLOCK CONSTRUCTION**

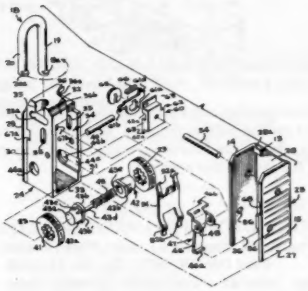
**Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.**

**Filed July 13, 1973, Ser. No. 379,098**

**Int. Cl. E05b** *37/02, 67/00*

**U.S. Cl. 70—21** **10 Claims**

An unexposed shackle combination padlock having a padlock body and a U-shaped laterally swingable shackle wherein the padlock body includes relatively reciprocatively movable outer shell and core portions with one of the shackle legs journaled in the core portion and the other leg swingable to open position only when said shell and core positions are shifted from a relatively alined to a relatively displaced position. Two separate locking systems are provided, including a combination dial system having wheel assemblies and a fence



member for selectively locking the shell and core portions against relative movement, and a key locking system is provided which is disabled from key operation whenever the dial wheels are not set on the proper combination. Either one of the combination locking system or the key locking system may be used separately, or they may be used in combination providing effectively a third locking system.

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**3,837,190**

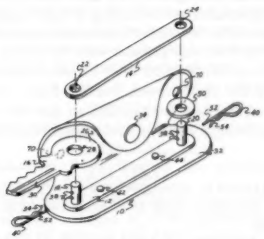
**KEY RETAINING DEVICE**

**Carl E. Monk, 428 Southland Blvd., Louisville, Ky. 40214**

**Filed June 22, 1973, Ser. No. 372,653**

**Int. Cl. A47g** *29/10*

**U.S. Cl. 70—456 R** **8 Claims**



A combination key retainer and leverage tool device is provided to facilitate manual control and force required to manipulate any one of a plurality of keys whereby a relatively small person such as a child or woman is more able to open a typical locking mechanism such as a pin-tumbler type lock. Separate means are provided with the device to enable rapid key identification, positive key retention and to implement changing of keys retained in the device.

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**3,837,191**

**SAFETY LOCK DEVICE FOR WINDOWS**

**Louis Soiderer, 2241 Delaware Dr., Ann Arbor, Mich. 48103**

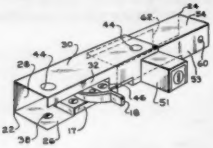
**Filed June 13, 1973, Ser. No. 369,441**

**Int. Cl. E05b** *65/08*

**U.S. Cl. 70—90** **5 Claims**

A safety lock device that can be assembled with existing household windows that have sliding upper and lower sashes

and a latch mounted on the sashes. The device consists of a hollow member secured to one sash so as to overlie the latch and permit access to the latch only through a side opening in



the hollow member and a cover or slide member telescopically mounted on the hollow member for movement to a position blocking the latch access opening. Provision is made for locking the slide in this position.

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**3,837,192**

**ELECTRIC LOCK FOR EMERGENCY EXIT DOOR**

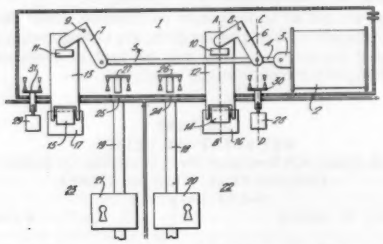
**Jean Arouete, 67, Boulevard Lannes, Paris, France**

**Filed Dec. 19, 1972, Ser. No. 316,440**

**Claims priority, application France, Sept. 27, 1972, 72.34175; France, Dec. 29, 1971, 71.47207**

**Int. Cl. E05b** *65/10*

**U.S. Cl. 70—92** **13 Claims**



A lock for an emergency exit door has an electromagnet with a movable core for actuating a bolt which cooperates with a striker box. When the electromagnet is energized the bolt is held in firm engagement with the striker box and the bolt remains in this position after an interruption of the current to keep the door closed, but the force urging the bolt against the striker box is cancelled so that the door may be opened by exerting a small pressure against the door.

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**3,837,193**

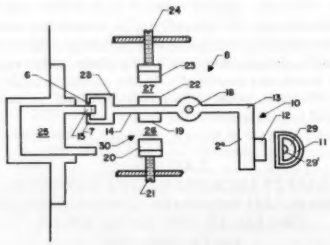
**MAGNETIC COMBINATION DOOR LOCK**

**Gregory N. Csurgay, 3320 N.E. 18th Ter., Fort Lauderdale, Fla. 33305**

**Filed Dec. 22, 1972, Ser. No. 317,755**

**Int. Cl. E05b** *47/00*

**U.S. Cl. 70—276** **3 Claims**



A biased tumbler-lever lock and magnetic key combination wherein the magnetic fields on the key cause the rotation of biased tumbler-levers about a pivot point in the lock to a particular position so as to free a bolt in the lock. The number of degrees of angular rotation of each tumbler-lever arm is determined by the magnetic field strength and the biasing strength. The tumbler-lever arms include an engagement mechanism having a normal engagement finger and an override engagement finger. The biasing force keeps the engagement mechanism of the tumbler-lever in the normal (locked) position when the magnetic means in the key is absent. Excessive rotation of the tumbler-lever, caused by excessive magnetic field strength re-engages the engagement mechanism to prevent release of th bolt. Insufficient rotation of the tumbler-lever prevents disengagement of the engagement mechanism and the bolt.

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**3,837,194**

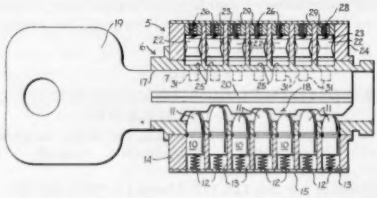
**PIN TUMBLER LOCK**

**Aaron M. Fish, Montreal, Quebec, Canada, assignor to Unican Security Systems, Ltd., Montreal, Canada**

**Filed Jan. 4, 1973, Ser. No. 320,869**

**Int. Cl. E05b** *47/00*

**U.S. Cl. 70—276** **3 Claims**



A lock mechanism having a cylinder normally held against rotation to an unlocking position by two sets of pin tumblers disposed at opposite sides of the cylinder axis. One set is of the conventional type comprising a number of pin tumblers and drivers therefor actuatable to cylinder releasing positions by the bitting on one edge of a key inserted into a keyway in the cylinder. The other set of tumblers is comprised of a number of magnets arranged in a row lengthwise along the other edge of a key in the keyway, and repelled to cylinder releasing positions by magnet members on the key.

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**3,837,195**

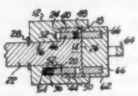
**MAGNETIC PIN LOCK**

**Eino W. Pelto, Box 158, Rt. 1, Calumet, Mich. 49913**

**Filed Feb. 8, 1973, Ser. No. 330,553**

**Int. Cl. E05b** *47/00*

**U.S. Cl. 70—276** **6 Claims**



A lock for a door or the like having a barrel rotatably supported within a housing for motion between locked and unlocked positions. The barrel includes a cylindrical section having forward and rear faces extending normally to its axis of rotation and containing a plurality of cylindrical cavities formed parallel to the axis of rotation, opening on the rear face of the section and extending almost through to the forward face which projects from the housing. The housing has a surface abutting the rear surface of the barrel section and formed with a number of cylindrical cavities which are axially aligned with the cavities in the barrel when the barrel is in its

locked position. Magnetized pins are disposed in these cavities and are biased by springs, some contained in the barrel and the others contained in the housing so that when the barrel is in the locked position the pins straddle the cavities and prevent rotation of the barrel. A key for the lock has a surface that may be brought into abutment with the forward face of the barrel and contains a number of magnets which act through the thin wall of the cylindrical section to attract certain of the magnetic pins and repel others, moving them all against their spring biases so that none of the pins straddle the cavities in the housing and the barrel. The key contains a recess which captures a stud extending from the barrel surface so that the key may then rotate the barrel to an unlocked position.

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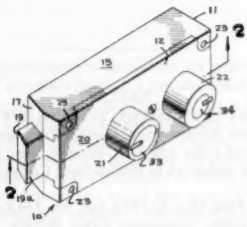
**3,837,196**

## KEY CHANGING LOCK FOR SAFE DEPOSIT BOXES

**Klaus W. Gartner; Randall Edward Van Ryne, both of Rochester, N.Y., and Eldon C. Higgins, Cedar Rapids, Iowa, assignors to Sargent & Greenleaf, Inc., Rochester, N.Y.**

**Filed Apr. 9, 1973, Ser. No. 349,102**
**Int. Cl. E05b** *35/12*
**U.S. Cl. 70—339** **11 Claims**



A changeable combination key lock for safe deposit boxes and the like, wherein a guard key is insertable into a rotatable guard key plug to set guard key tumblers to permit retracting movement of a bolt, and a renter's key is insertable into a rotatable renter's key plug for engagement with normally coupled segmented tumblers to aline them to permit retraction of the bolt. A cam member is provided to be actuated by a change key which is inserted into the guard key plug when the guard key has been removed and the bolt is retracted, to disengage gating portions of the segmented tumblers from the remaining portions of such tumblers, whereupon a new renter's key may be inserted and the segmented tumblers set for the key configuration of the new renter's key.

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**3,837,197**

## KEY-OPERATED LOCKS

**Pedro Lopez, 2295 de Londres St., St. Laurent, Quebec, Canada**

**Filed Mar. 19, 1973, Ser. No. 342,856**
**Claims priority, application Canada, Apr. 27, 1972, 140775**
**Int. Cl. E05b** *15/14, 27/02*
**U.S. Cl. 70—364 A** **6 Claims**

A lock adapted to be operated by a bitted key and including dual locking features which must be both operated to cause the unlocking. A key-operated lock including a cylinder, a plug rotatable into the cylinder, tumblers carried by the plug and arranged to be displaced radially of the plug to lock and unlock the latter to the cylinder, at least one indentation into each tumbler, a locking side bar extending longitudinally of the plug and arranged to releasably lock the latter to the cylinder, and movable releasing members adapted to respond to predetermined positioning of the tumblers to release the locking side bar.

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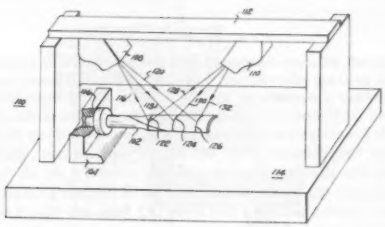
**3,837,198**

## STEREOSCOPIC GAGE AND GAGING SYSTEM

**Paul T. Higgins, Orchard Lake, Mich., assignor to The Bendix Corporation, Southfield, Mich.**

**Filed Apr. 16, 1973, Ser. No. 351,728**
**Int. Cl. B21c** *51/00;* **B23q** *17/00*
**U.S. Cl. 72—9** **20 Claims**



A stereoscopic optical system for gaging the surface of articles having complex contours or shapes is described. The system projects complementary sets of stereoscopic patterns on the article being gaged to determine the conformity of the article's surface to the desired contour or configuration. Nonconforming surfaces perturb the relationship between the complementary patterns imaged on the surface, of the article being gaged, giving a visual indication of a nonconformity. The perturbed relationship between the complementary patterns imaged on the surface of the article may also be detected electro-optically providing an electrical signal indicative of the nonconformity which can be used to initiate a number of automatic or semiautomatic machine operations including in-situ correction of the nonconforming surface.

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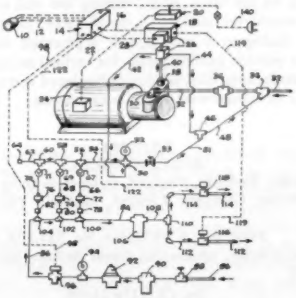
**3,837,199**

## HOT ROLLING MILL LUBRICATION APPARATUS AND PROCESS

**Louis C. Larsonneur, Palos Heights, Ill., assignor to Nalco Chemical Company, Chicago, Ill.**

**Filed Nov. 6, 1972, Ser. No. 304,103The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.**
**Int. Cl. B21b** *27/10, 37/00, 45/02*
**U.S. Cl. 72—21** **2 Claims**



A method and apparatus for applying hot rolling mill lubricants composed of water and difficultly dispersible oil to the

rolls of rolling stands used to reduce hot steel whereby the lubricant is applied only during the period when the workpiece contacts the rolls of the rolling stands. The oil is continuously circulated in a loop system to maintain it at a desired temperature range, and then admixed with water when a rolling stand calls for lubrication. Water is preferably continuously fed to the rolls for cooling.

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**3,837,200**

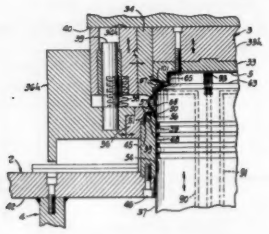
**APPARATUS FOR MAKING SHEET METAL PULLEYS**

**Fr... L. Wolbert, Northfield, Ohio, assignor to Arrowhead Engineering Corporation, Knox, Ind.**

**Filed Feb. 9, 1972, Ser. No. 224,778**

**Int. Cl. B21d** *39/08*

**U.S. Cl. 72—57** **27 Claims**



A method for forming the grooves in single and multigroove sheet metal pulleys, including shaping and/or crimping of the groove walls, wherein the grooves are formed by a sequential, single step, continuous process from a punched or drawn blank without intermediate handling and/or displacement of the blank using both axial and radial pressures, wherein the applied radial pressures or forces are substantially less than and applied axial pressures or forces. The pulley may have grooves of the same or different pitch and of the same or different diameter.

Apparatus for forming a sheet metal pulley from a hat- or cup-shaped blank having an outwardly extending flange. The apparatus includes a die having a seat upon which the blank rests, and a seal between the seat and flange. A fluid conduit conducting fluid to the interior of the blank. Pumps and valves providing a predetermined and adjustable pressure and volume of fluid within the blank during formation of a pulley. Segmented forming dies, reciprocable laterally of and relative to the blank, engaging the flange of the blank on the side remote from the seal to effect the seal and defining the pulley groove remote from the hub. An axial ram moving continuously during formation of the pulley, exerting an axial pressure and force on the blank, and crimping the wall of the pulley groove nearest the hub into a double wall. In apparatus for forming multigroove pulleys, the segmented forming dies carry and provide guiding means for vertical movement of intermediate forming dies, which are displaced vertically toward the flange by engagement by and with the ram.

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**3,837,201**

**ROLLING MILLS**

**Jack Maltby, Sheffield, England, assignor to Davy and United Engineering Company Limited, Sheffield Yorkshire, England**

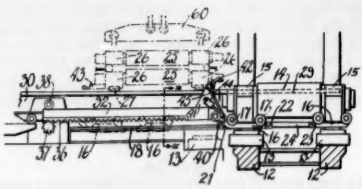
**Filed Mar. 5, 1973, Ser. No. 337,878**

**Claims priority, application Great Britain, Mar. 6, 1972, 10285/72**

**Int. Cl. B21b** *31/08*

**U.S. Cl. 72—239** **10 Claims**

A roll change rig for a four-high plate mill stand consists of a beam which can be driven towards and away from the stand and which has two separate couplings, one for connection to a work roll and the other for connection to the lower back-up roll. There are separate rolls for the lower work roll and lower back-up roll, on which the respective roll may be moved through the stand and into a roll change area, by operation of



the beam. If the stand has hydraulic roll gap adjustment, the rig includes a trolley which can run on the back-up roll rails, which is driven by the roll change beam, and which carries lifting means for lifting a piston and cylinder assembly from the mill.

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**3,837,202**

**ROTARY ULTRASONIC TESTING APPARATUS**

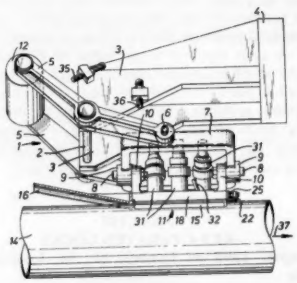
**Matthew James Hetherington, Carlton Park near Market Harborough, and Peter Atkinson, Stanion, near Kettering, both of England, assignors to British Steel Corporation, London, England**

**Filed Mar. 6, 1973, Ser. No. 338,635**

**Claims priority, application Great Britain, Mar. 9, 1972, 11085/72**

**Int. Cl. G01n** *29/04*

**U.S. Cl. 73—71.5 U** **10 Claims**

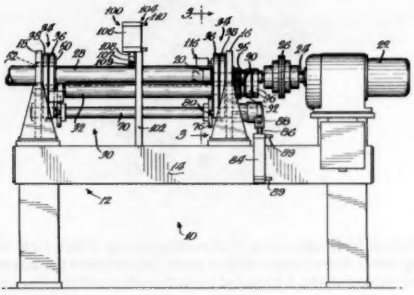


A probe unit for use in rotary ultrasonic testing apparatus which includes a tube engaging probe pad carrying at least one ultrasonic testing transducer probe, in which the probe pad is mounted at one end of an arm provided with a counterweighting mass at the other end thereof. The unit also includes a member rotatable about an axis substantially coincident in use with that of the tube to be tested, and the arm, which is inclined relative to the axis of rotation, is pivotally connected intermediate its ends to the rotatable member for pivotal movement of the pad towards and away from the axis of rotation, whereby upon rotation of the unit with the rotatable member, the pad is urged inwards towards the axis of rotation by means of centrifugal force generated by the counterweighting mass.

## 3,837,203
## CORE STRAIGHTENER ASSEMBLY

Elmer L. Ruth, Winneconne, Wis., assignor to Appleton Machine Company, Appleton, Wis.

Filed Oct. 30, 1972, Ser. No. 301,839
Int. Cl. B21d 15/00
U.S. Cl. 72—110 12 Claims

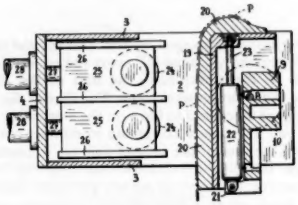


This application discloses apparatus for returning bent or deformed ends of hollow cores to a circular condition. The apparatus or assembly consists of a mandrel that is rotated about a fixed axis on a support with a pair of rollers mounted on the support adjacent the mandrel to clamp a hollow core between the mandrel and the rollers. The rollers are driven at the same speed as the mandrel and are capable of being rotated about the axis of the mandrel to change the point of engagement between the peripheral surface of the rollers and the surface of the core to be straightened.

## 3,837,204
## MACHINE FOR BENDING PLATE SECTIONS

Gian Carlo Zaramella, Torino, Italy, assignor to O.M.P. Officine Meccaniche Ponti & C.s.n.c., Torino, Italy

Filed Mar. 13, 1973, Ser. No. 340,753
Int. Cl. B21d 7/04
U.S. Cl. 72—153 6 Claims

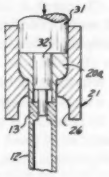


A machine for bending plate sections such as bumpers for vehicles, by means of rollers pushed against the piece of section being worked, mounted on a mandrel, wherein the mandrel is mounted movable in translation upon a support member pivotally connected to the structure of the machine, and the rollers are pushed by respective cylinders according to a fixed direction approximately directed towards the rotation axis of the support member carrying the mandrel.

## 3,837,205
## PROCESS FOR COLD FORMING A METAL TUBE WITH AN INWARDLY THICKENED END

Joseph A. Simon, 237 Lothrop, Grosse Point Farms, Mich. 48236

Filed Aug. 1, 1973, Ser. No. 384,441
Int. Cl. B21c 25/08
U.S. Cl. 72—260 3 Claims

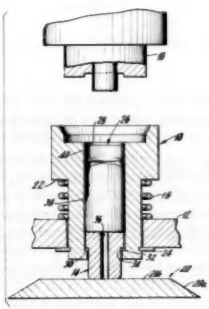


Placing a short tubular metal blank into an open die, having an inner, annular extrusion shoulder, and partially pressing the blank through the shoulder to extrude an elongated, uniform wall thickness tube portion. Then placing a second blank into the die in end to end contact with the remaining portion of the first blank, and pressing the second blank similarly part way through the die extrusion shoulder to simultaneously extrude the remaining portion of the first blank through the shoulder to form it with the same OD as its first extruded portion, but with a smaller ID, to form an inwardly thickened end portion on the extruded part, while also extruding the uniform wall thickness portion on the second blank, and then repeating the cycle.

## 3,837,206
## METHOD AND APPARATUS FOR CRIMPING BATTERY CASINGS

Ignatius Michalko, Ossining, N.Y., assignor to Power Conversion, Inc., Mt. Vernon, N.Y.

Filed June 7, 1973, Ser. No. 367,752
Int. Cl. B21d 19/12
U.S. Cl. 72—348 3 Claims



Battery casings are crimped by an apparatus including a holder having a cylindrical bore in which the casings are received, a spring which biases the holder toward a predetermined position, a blocking member which projects into one end of the holder and a plunger which engages the opposite end of the holder to move it against the force of the spring. The battery casing to be crimped is inserted within the holder and completely contained within the bore. When the plunger engages the holder, it crimps the upper rim of the casing inwardly while the casing is held against outward deformation of its sidewalls by the holder.

3,837,207

## PROCESS OF CONTINUOUSLY HOT-FORMING CONTINUOUS CAST STEEL STOCK

Bruno A. Tarmann, Kapfenberg, Austria, assignor to Gebr. Bohler & Co., AG, Kapfenberg, Austria

Filed Apr. 20, 1972, Ser. No. 245,809

Claims priority, application Germany, Apr. 21, 1971, 2119347

Int. Cl. B21b 1/44

U.S. Cl. 72—366 12 Claims

The continuous steel stock to be hot-formed has been continuously cast in a rectangular as-cast cross-section which has corner zones and has a shortest side length in excess of 100 millimeters and a side length ratio between 1:1.5 and 1.5:1. The stock is subjected with utilization of its casting heat to a deformation of at least 20 percent by a pair of grooved rolls to form deformed continuous steel stock having side faces which are less curved in cross-section than said corner zones and which include the material of all said corner zones of said as-cast cross-section.

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3,837,208

## METHOD AND APPARATUS FOR BLIND RIVETING

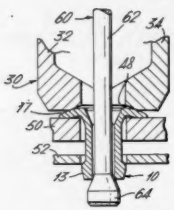
Alan Russell Davis, Welwyn Garden City; Raymond Dennis Lacey, Essendon, and John Meredith Gray, Harpenden, all of England, assignors to Avdel Limited, Hertfordshire, England

Filed Feb. 13, 1973, Ser. No. 332,126

Claims priority, application Great Britain, Feb. 14, 1972, 6823/72

Int. Cl. B21d 9/05

U.S. Cl. 72—391 10 Claims




A tubular rivet having a preformed head and a shank which extends through aligned apertures of workpiece members is set by expanding the end of the shank remote from the head to form a blind head by pulling the head of a mandrel into the bore of the shank. Then the shank together with the blind head and a central portion of the preformed head is moved in a direction towards the preformed head while restraining movement of the periphery of the preformed head, thereby deforming the preformed head and decreasing the distance between the preformed head and the blind head.

An anvil for a rivet setting tool has an annular abutment for engaging the periphery of the preformed head of the rivet and a recess into which the central portion of the preformed head can enter when it is deformed.

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3,837,209

## FORGING MACHINE

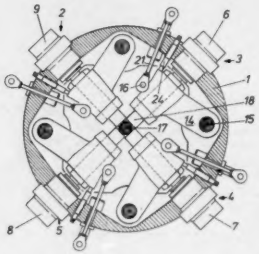
Rudolf Siegfried Guse, 4 am Gatherhof, 4 Dusseldorf-Rath, Germany

Filed Dec. 4, 1972, Ser. No. 312,032

Int. Cl. B21d 41/00

U.S. Cl. 72—402 6 Claims

A so-called quick forging machine for forging elongated half-finished products by means of four peripherally distributed forging units incorporates cyclically driven forging arms which are selectively: either retained fixedly against a stationary stop for operation in one mode or are freely pivotal about an axis for operation in a second mode. The stroke of the main operating piston is transmitted to the workpiece




through hydraulic thrust-transmitting means which yield during linear operation in the first mode and transmit the thrust in the second mode. Elongated forged products of circular cross section as well as square or rectangular members having rounded or sharp edges can thereby be produced on the same machine.

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3,837,210

## PROCESS AND MACHINE FOR SWAGING RECTANGULAR-SECTION WORKPIECES

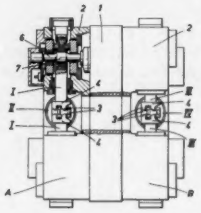
Bruno Kralowetz, St. Ulrich 142, Steyr, Austria

Filed Apr. 13, 1973, Ser. No. 350,737

Claims priority, application Austria, May 3, 1972, 3823/72

Int. Cl. B21j 7/18

U.S. Cl. 72—403 6 Claims




The workpiece is swaged by first and second pairs of dies, which are angularly spaced 90° apart and caused to blow in alternation on the workpiece. The dies of the first pair are caused to blow on the workpiece. The dies of the second pair are subsequently caused to blow on the workpiece. The dies of the first pair are caused to remain in contact with the workpiece until the dies of the second pair are in contact with the workpiece.

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3,837,211

## MULTI-STROKE HAND TOOL

Paul William Gress, Newmanstown, and William Roderick Over, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

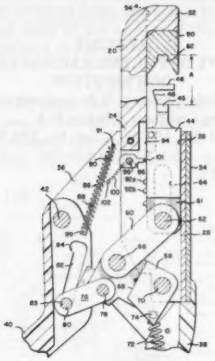
Filed July 6, 1973, Ser. No. 376,979

Int. Cl. B21d 7/06

U.S. Cl. 72—410 5 Claims

Two stroke hand tool has a reciprocable ram, a toggle mechanism for moving the ram, and a movable handle for straightening the toggle mechanism. A connecting link ex-

tends from the handle to one of the links of the toggle mechanism. This connecting link is connected to the handle at one location during the first stroke of the handle to bring



about substantial ram travel. During second stroke of the handle, the connecting link is pivoted to the handle at a second location to develop high thrust in the ram during the final portion of the ram stroke.

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**3,837,212**

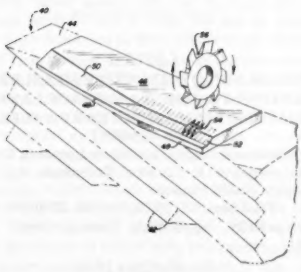
**METHOD AND APPARATUS FOR MAKING A THREADED FASTENER WITH CAPTIVE CLAMPING MEANS**

**Charles E. Gutshall, Schaumburg, Ill., assignor to Elco Industries, Inc., Rockford, Ill.**

**Division of Ser. No. 222,532, Feb. 1, 1972, abandoned. This application July 2, 1973, Ser. No. 375,707**

**Int. Cl. B21d** *17/04;* **B23p** *19/08*

**U.S. Cl. 72—469** **5 Claims**



A fastener having an apertured clamping means on its shank and an annular retaining means therefor is fabricated by assembling the apertured clamping means on the shank adjacent the head and thereafter forming an annular collar by an improved technique whereby the surface of the collar adjacent the clamping means is disposed substantially perpendicular to the axis of the shank. The improved technique includes the steps of subjecting a peripheral segment of the shank, while the shank is rotating and having threads rolled on other portions thereof, to metal-forming radial pressure and progressively expanding the segment axially towards the assembled clamping means so as to form a progressively widening annular groove in the shank while rotationally swaging the metal transferred from the groove into the desired annular collar. For such purposes a roll thread die is provided having thread-forming surfaces and a slot for a die insert containing a groove-forming face and related surfaces which spin the metal transferred from the groove into the annular collar on the shank.

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**3,837,213**

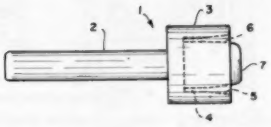
**SIZING AND FORMING TOOL**

**Ralph F. Guzzo, R.D. No. 1, Amity, Pa. 15311**

**Filed Mar. 13, 1973, Ser. No. 340,758**

**Int. Cl. B21d** *3/14*

**U.S. Cl. 72—479** **1 Claim**



A sizing and forming tool for reshaping the end of a pipe or tube that has been cut. The tool has an internal expanding cam and an external contracting cam for reshaping such pipe or tube to perfectly cylindrical form.

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**3,837,214**

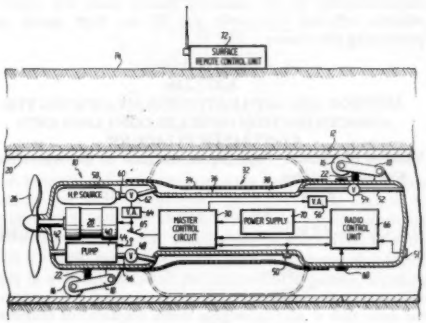
**SELF-PROPELLED PIPELINE PLUG**

**Robert J. Guest, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.**

**Filed Jan. 30, 1973, Ser. No. 328,022**

**Int. Cl. G01m** *3/28*

**U.S. Cl. 73—40.5 R** **20 Claims**

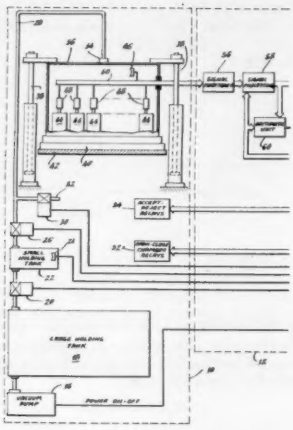



A self-propelled pig carrying plugging means for sealing a pipeline at selected points along the length thereof in which the pig may be stopped and the plugging means selectively actuated for sealing the pipeline. A leak may then be detected and evaluated by pressurizing the pipeline from a point on one side of the pig, and thereafter monitoring pipeline pressure. Alternatively, a leak condition may be separately sensed, the pig positioned to one side of the leak, the plugging means actuated, and the pipeline pressurized from the point on the other side of the leak, for evaluating leak size by monitoring the rate of pipeline depressurization.

## 3,837,215
## METHOD AND APPARATUS FOR TESTING SEALED CONTAINERS

Thomas J. Massage, One Curran Ln., Huntington, Conn. 06484

Filed May 21, 1973, Ser. No. 362,487
Int. Cl. G01m 3/36
U.S. Cl. 73—45.4 10 Claims

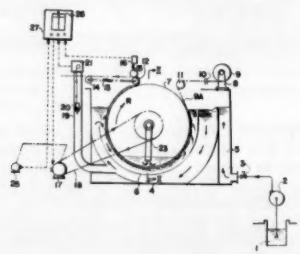


Method and apparatus for automatically non-destructively testing and classifying sealed containers. The containers are passed through a sealed vacuum or pressure chamber and expand or contract because of differential pressure acting on the container walls. The magnitude of the leak rate is computed by a central programming unit through a series of measurements, error corrections, and computations of container wall travel and velocity of wall travel. Each container is classified by the magnitude of its leak rate in comparison with operator programmed accept/reject limits. Multiple sensors are used simultaneously in the chamber during each test cycle to achieve efficient economic use of the high speed data processing electronics.

## 3,837,216
## METHOD AND APPARATUS FOR MEASURING THE CONCENTRATION OF SOLID CONTAMINANTS CONTAINED IN LIQUIDS

Yoshimi Shinohara, Fuji, Japan, assignor to Shinohara Seiki Kabushiki Kaisha

Filed Apr. 30, 1973, Ser. No. 355,478
Int. Cl. G01n 15/00
U.S. Cl. 73—61 R 13 Claims

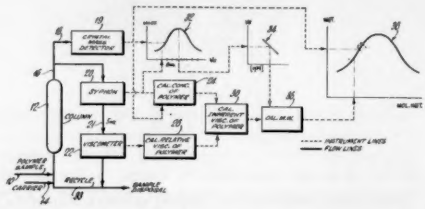


Liquid containing a solid contaminant is filtered by a filtering cylinder rotated in a container. The number of rotations of the filtering cylinder is controlled in accordance with the liquid level in the container. As the number of revolutions of the filtering cylinder is proportional to the concentration of the contaminant the speed of the filtering cylinder is detected to determine the concentration.

## 3,837,217
## MEASUREMENT OF POLYMER MOLECULAR WEIGHT DISTRIBUTION

Wolfgang W. Schulz, Warren, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Oct. 19, 1972, Ser. No. 298,956
Int. Cl. G01n 31/08
U.S. Cl. 73—61.1 C 6 Claims



For use with a gel permeation chromatograph measuring molecular weight distribution of polymeric materials, the combination of a piezoelectric crystal detector for measuring mass with an automatic viscometer for inferential measurement of molecular weight provides improved measurement of absolute molecular weight distribution of polymeric materials. Recycling of polymer fractions through the gel permeation chromatograph provides improved resolution of the individual fractions.

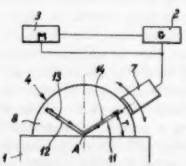
## ERRATUM

For Class 73—71 see:
Patent No. 3,837,202

## 3,837,218
## PROCESS FOR NON-DESTRUCTIVE MEASUREMENT OF THE EXTENT TO WHICH A SURFACE LAYER OF A MATERIAL HAS BEEN AFFECTED BY A SUPERFICIAL TREATMENT

Christian Flambard, Gagny, and Alain Lambert, Creil, both of France, assignors to Centre Technique des Industries Mecaniques, Senlis, France

Filed Sept. 21, 1972, Ser. No. 290,873
Claims priority, application France, Sept. 24, 1971, 71.34370
Int. Cl. G01n 29/00
U.S. Cl. 73—67.8 R 12 Claims



The invention relates to a process and device for non-destructive measurement of the extent to which a surface

layer of a material has been affected by a superficial treatment. The device includes a single transducer emitter-receiver of ultrasonic waves movable over a cylindrical surface of a coupling block, the latter having a curved reflective surface such that a beam of ultrasonic waves, when reflected by the surface of the material being treated, is then reflected by the curved surface back to the surface of the material and from there reflected back to the transducer.

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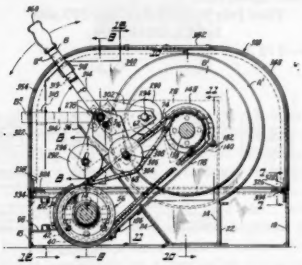
**3,837,219**

**VARIABLE INERTIA FLYWHEEL APPARATUS**

**William Clayton, El Monte, Calif., assignor to Clayton Manufacturing Company, Los Angeles, Calif.**

**Filed Dec. 30, 1969, Ser. No. 889,180**
**Int. Cl. G01l 5/13**
**U.S. Cl. 73—117** **7 Claims**



Variable inertia flywheel apparatus for use with a chassis dynamometer, during vehicle engine exhaust gas emission measurements. The apparatus simulates the effect of vehicle roadway-inertia loads on the engine during acceleration and deceleration, while the vehicle is being operated on the dynamometer. A wide range of inertia loads are simulated by three flywheels, each having a different mass; two of the flywheels are each driven from a main shaft, connected with a dynamometer roll, at two different speed ratios, and the third flywheel is driven from the same main shaft at three different speed ratios. More specifically, the flywheels are driven by sheaves and separate sets of belts that can be independently and selectively tensioned to drive one or more of the flywheels at a speed ratio relative to the speed of the dynamometer rolls so as to simulate the corresponding inertia loads. The third flywheel, which normally is in use at all times during a test, is designed to compensate for the inertia load of the particular power absorption unit, dynamometer rolls, drive belts, etc., with which the apparatus is used. Inertia load increments of 250 pounds can be simulated for testing vehicles weighing between about 1,500 pounds through 3,000 pounds, and 500 pound inertia load increments can be simulated for vehicles weighing between about 3,000 and 5,500 pounds. The flywheels are driven by sets of belts tensioned by idlers carried by shift plates operated by control levers that can be individually and selectively shifted to provide the 1,500 to 5,500 pound vehicle weight range of inertia loads, as well as a no-inertia load condition.

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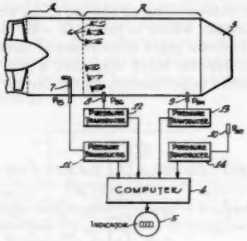
**3,837,220**

**DETERMINATION OF GROSS THRUST-RELATED PARAMETERS**

**George B. McDonald, and George B. Mackintosh, both of Bells Corners, Ontario, Canada, assignors to Control Data Canada, Ltd., Willowdale, Ontario, Canada**

**Filed Oct. 27, 1972, Ser. No. 301,335**
**Claims priority, application Canada, Aug. 31, 1972, 150685**
**Int. Cl. G01m 15/00**
**U.S. Cl. 73—117.4** **12 Claims**

It is known to obtain a correction factor by determining theoretical gross thrust by measuring engine pressures and by measuring actual gross thrust and using a comparison between theoretical and measured gross thrust to develop a correction factor. However the correction factor is variable in accordance with certain engine pressures and requires the use of




elaborate altitude test cell facilities to define it for a practical working range. This invention measures engine pressures in a static sea level facility, derives a correction factor to be applied to one of the measured pressures for use in a determination of gross thrust useful under all operating conditions.

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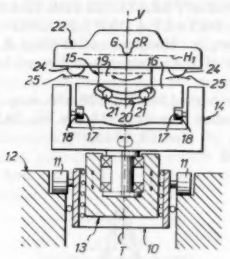
**3,837,221**

**LONGITUDINAL POSITIONING STOP FOR FIXED STATION AUTOMOBILE VEHICLE TEST BEDS**

**Jean Odier, Antony, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France**

**Filed Sept. 7, 1972, Ser. No. 286,910**
**Claims priority, application France, Nov. 3, 1972, 72.32377**
**Int. Cl. G01l 5/13**
**U.S. Cl. 73—124** **25 Claims**



A longitudinal positioning stop for fixed station automobile vehicle test beds, of the type allowing the said vehicle five degrees of freedom of movement namely, lateral translation, vertical translation, and rotation about three axes, provided with a vehicle support platform, a carriage moveable horizontally in a direction called the transversal direction, a column mounted for movement in a vertical direction, a bracket mounted for rotation about a vertical axis, a first body permitting rotation about a first horizontal axis, a second body permitting rotation about a second horizontal axis, the said horizontal axis converging at a centre of rotation situated on the said second vertical axis.

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**3,837,222**

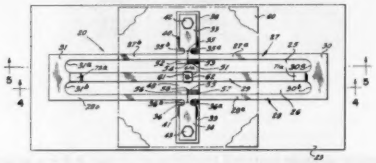
**LOAD CELL**

**Seymour H. Raskin, Dallas, Tex., assignor to Sands Measurement Corporation, Dallas, Tex.**

**Filed Aug. 15, 1972, Ser. No. 280,772**
**Int. Cl. G01l 1/22**
**U.S. Cl. 73—141 A** **13 Claims**

A load cell of the beam type having a planar operator member having a pair of parallel longitudinal slots defining a

central beam member and a pair of parallel bearing members spaced outwardly of the beam member, the outer ends of the bearing members and of the beam member being integral with one another, the operator member having a pair of laterally outwardly extending support members positionable on a horizontal laterally spaced surface of a support block, the load or force to be measured being applied to the central portion of the beam member which is provided with strain measuring means such as strain gages at locations of flexure of the beam member. The support block may have a pair of transversely extending narrow edges underlying the central portions of the



bearing members for preventing torsional movement of the bearing members as the load is applied to the beam member.

A modified form of the load cell has an operator member whose support members extend parallel to and longitudinally of the bearing members and are secured thereto by transverse connector members, the support members being secured at opposite ends to horizontal support surfaces of a support block, the connector members and the bearing members engaging transverse narrow edges of the support block whereby the support members may be prestresssed upwardly at their midpoints.

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**3,837,223**

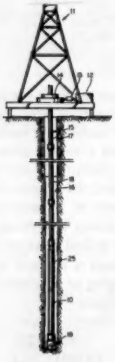
## METHOD AND APPARATUSES FOR TRANSMITTING DATA UP A DRILL STRING

**Albert P. Richter, Jr., Houston, and William R. McEvers, Jr., Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 290,676, Aug. 20, 1972. This application May 24, 1973, Ser. No. 363,784**

**Int. Cl. E21b *47/12***

**U.S. Cl. 73—151** **17 Claims**



Methods and at least one mechanism for carrying out each of the methods are disclosed. A method of (1) generating time modulated torque pulses by engaging and disengaging a mud turbine driven rotating torque generator in the bottom of a wellbore, and (2) monitoring the top of the drill string for the torque pulses therein may be practiced by a mud driven turbine inertial wheel for being momentarily and precisely braked or declerated relative to a drill collar on the lower end of a drill string in a wellbore while drilling for generating the time modulated torque pulses in the drill string for being monitored at the surface. Mechanical, electrical and fluid operated brakes and a mud turbine driven generator are disclosed for providing power to a motor at the bottom of the drill string or for being intermittently braked rapidly for generating the torque pulses.

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**3,837,224**

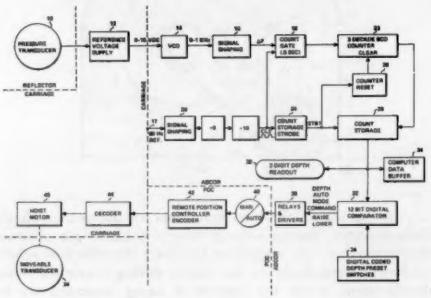
## DIGITAL AUTOMATIC DEPTH CONTROL AND READOUT FOR A MOVABLE TRANSDUCER PACKAGE

**Donald E. Ream, Jr., San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed July 9, 1973, Ser. No. 377,485**

**Int. Cl. G01b *7/26***

**U.S. Cl. 73—170 A** **1 Claim**



A system for remotely monitoring and maintaining a predetermined depth of an underwater instrumentation package. A signal proportional to depth is converted into pulses capable of being counted. The number of pulses counted within a given time period is a direct indication of the depth and is visually displayed on a digital readout device. An automatic control signal can also be generated by comparing the digital depth signal with a preset signal.

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**3,837,225**

## DEPTH GAUGES

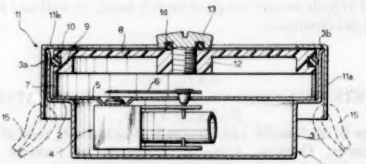
**Carlo Alinari, Corso Vittorio Emanuele 200, Turin, Italy**

**Continuation of Ser. No. 120,225, March 2, 1971, abandoned. This application May 17, 1972, Ser. No. 254,270**

**Claims priority, application Italy, Mar. 14, 1970, 67877/70**

**Int. Cl. G01f *23/14***

**U.S. Cl. 73—300** **14 Claims**



A depth gauge has a rigid casing and a transparent face, at least a portion of the transparent face being flexible to allow external pressure to be transmitted to the interior of the instrument.

3,837,226

## SIGHT GLASS ASSEMBLY AND A METHOD OF PRODUCING THE SAME

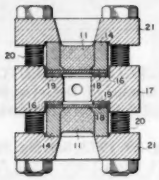
Eiji Kawawa, Tokyo, Japan, assignor to Nihon Klingage Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,721

Claims priority, application Japan, Dec. 29, 1970, 45-128168

Int. Cl. G01f 23/02

U.S. Cl. 73—331 5 Claims



A sight glass assembly for use with a peep hole of a pressure vessel, comprising a glass plate and a reinforcing metal ring, said ring framing said plate in a manner of tightly enclosing said plate over a substantially cylindrical boundary surface between said plate and said ring and presenting an end face substantially flush with a surface of said plate, wherein said cylindrical boundary surface is tapered adjacent and toward said end face to present a base angle of substantially 45° so that the stress-concentration expected to occur in the glass plate due to the hoop tension applied thereto by said ring will be relieved in said tapered boundary surface of said glass plate and said ring.

3,837,227

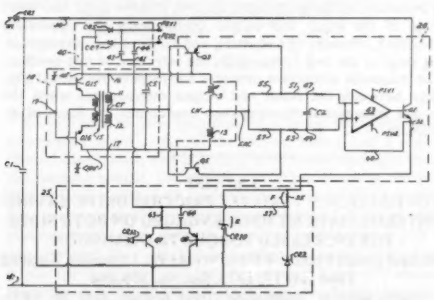
## LINEAR TRANSDUCER SYSTEM

John R. Tavis, Mariposa, Calif., assignor to Tavis Corporation, Mariposa, Calif.

Continuation-in-part of Ser. No. 225,456, Feb. 11, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,518

Int. Cl. G01i 9/10

U.S. Cl. 73—398 R 10 Claims



Transducing means senses a variable physical parameter and forms a variable impedance element having an impedance that varies as a function of variations in the physcial parameter. An impedance element is connected in series with the variable impedance to define a network having an input-to-output voltage-signal transmission characteristic that is a non-linear function of variations in the physical parameter. A circuit arrangement responsive to a reference signal and the output signal of the network controls the input signal so that a voltage signal developed across one of the impedance elements has a predetermined magnitude that is substantially unaffected by either variations in the variable impedance or the output signal. The output signal of the network provides a linear indication of variations in the physical parameter. In a preferred arrangement, a coil in a variable-reluctance pressure transducer has an impedance, the magnitude of which is a reciprocal function of variations in ambient pressure acting against a diaphragm. A circuit applied across the coil a sinusoidal voltage that has a predetermined magnitude. A demodulator circuit coupled to the coil provides a direct current signal which indicates how much pressure is acting against the diaphragm.

3,837,228

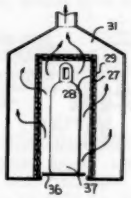
## TRACER GAS-PERMEABLE PROBE FOR LEAK DETECTORS

Robert C. Nemeth, Huntington Station, N.Y., and Willaim D. Dugger, Kimberton, Pa., assignors to Vacuum Instrument Corporation, Huntington Station, N.Y.

Filed Apr. 9, 1973, Ser. No. 349,616

Int. Cl. G01m 3/20

U.S. Cl. 73—40.7 8 Claims



In a leak detector system which employs a predetermined tracer gas, such as helium, the detector probe is provided with a plastic film which is selectively permeable to the tracer gas in preference to all other atmospheric gases. All detected gases must pass through the film in order to reach the detection element. Because of the selective permeability of the film the probe can assume substantially any size and configuration and can be employed without preparing a contaminant free environment. Moreover, the selectivity of the probe film permits the detection element to be a simple flow monitoring device rather than a mass spectrometer or other gas-distinguishing apparatus.

3,837,229

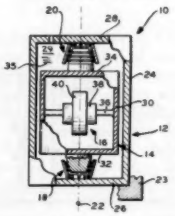
## GIMBAL SLIP RING

John C. Stiles, Morris Plains, and William C. Albert, Boonton, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed June 15, 1972, Ser. No. 262,994

Int. Cl. G01c 19/16

U.S. Cl. 74—5 R 8 Claims



A gimbal assembly comprising, an outer gimbal having a longitudinal axis, an inner gimbal pivotally supported by the

outer gimbal coaxially therewith, a motor mounted on the inner gimbal with the motor having motor leads, a pivot unit pivotally connecting the inner gimbal to the outer gimbal coaxially therewith at one end thereof, and a slip ring unit pivotally connecting the inner gimbal to the outer gimbal coaxially therewith at the other end thereof with the slip ring unit being connected to the motor leads.

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**3,837,230**

## MOTOR DRIVEN CHISELING DEVICE

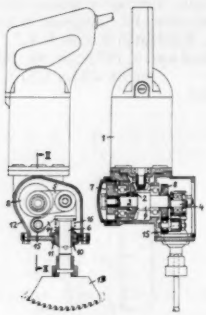
**Henry Neuenberg, Ahornstrasse 22, 43 Essen, Germany**

**Filed Apr. 16, 1973, Ser. No. 351,786**

**Claims priority, application Germany, Apr. 14, 1972, 2218033**

**Int. Cl. F16h *21/18***

**U.S. Cl. 74—47** **8 Claims**



A motor driven chiseling device for making cuts and grooves in rocks and other hard surfaces by means of a tool having milling teeth. The device has at least one working rod which by means of a joint is mounted for pendulum movement and is also movable in the direction of its longitudinal axis while extending from the interior of the transmission housing to the outside thereof. The passage of the working rod through the transmission housing is sealed by the joint. That portion of the working rod which is located outside the transmission housing is adapted to support a chiseling tool, whereas that portion of the working rod which is located within the transmission housing is operatively connected to a transmission system inside the transmission housing so that the transmission system causes the working rod to carry out a pendulum movement and if desired also an axial movement.

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**3,837,231**

## VIBRATOR FOR GENERATING DIRECTIONAL VIBRATIONS

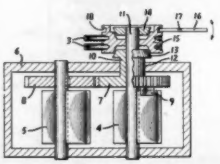
**Henrik Holmlund, Jarfalla, Sweden, assignor to Aktiebolaget Vibro-Verken**

**Filed Jan. 22, 1973, Ser. No. 325,640**

**Claims priority, application Sweden, Jan. 27, 1972, 916/72**

**Int. Cl. F16h *33/00***

**U.S. Cl. 74—61** **6 Claims**



A vibrator of the type having a pair of bodies rotatable eccentrically about respective mutually parallel axes in opposite directions and gears associated with the eccentrically rotatable bodies meshing to provide coordinated counter-rotation of the bodies is provided with an improved drive arrangement for selectively driving the bodies in rotation in either of two distinct and separate phase relationships. One of the rotatable bodies is rotatable relative to the gear associated with it, and matching abutments on that body and gear are mutually engageable to transmit driving force between them in two different angularly spaced-apart positions of the rotatable body, relative to the associated gear. A belt drive having a shifting mechanism is arranged to transmit rotational power either to the body or the gear of the relatively rotatable body and gear components.

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**3,837,232**

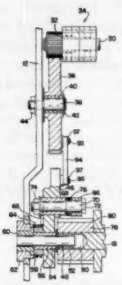
## MAGNETIC SLIP CLUTCH

**Gary D. Fredell, and Gentiel M. DeGryse, both of East Moline, Ill., assignors to Gulf & Western Industries, Inc., New York, N.Y.**

**Filed Aug. 29, 1973, Ser. No. 392,685**

**Int. Cl. F16h *27/02*; F16d *7/02***

**U.S. Cl. 74—142** **11 Claims**



A permanent magnet slip clutch is disclosed for providing slippage at a predetermined torque transmission between driving and driven members. The clutch is comprised of abutting, axially aligned input and output components each comprised of concentric rings of magnetic material and a permanent magnet ring therebetween. The concentric rings are oppositely polarized by the permanent magnet, and the outer and inner rings of the input and output components are oppositely polarized, whereby the abutting end faces of the corresponding rings of the two components are attracted to one another. The magnetic attraction provides for relative rotational slippage between the input and output components when the torque transmitted therebetween overcomes the force of attraction.

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**3,837,233**

## CONTINUOUSLY VARIABLE FRICTION DRIVE HAVING INTERMEDIATE MEMBER ENGAGED ON BOTH SIDES FOR INCREASED TORQUE TRANSMISSION

**Michael Joseph French, 4 Haverbreaks Pl., Lancaster, England**

**Filed July 17, 1973, Ser. No. 379,984**

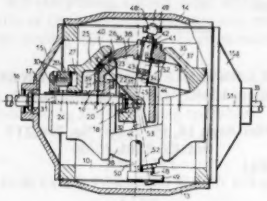
**Claims priority, application Great Britain, July 20, 1973, 34004/73**

**Int. Cl. F16h *15/26***

**U.S. Cl. 74—200** **11 Claims**

The invention provides a continuously variable friction drive comprising first and second members rotatable about a first axis and having convex and concave driving surfaces respectively, a third member rotatable about a second axis intersecting the first axis and having concave and convex driving surfaces arranged respectively to engage the convex and concave driving surfaces on the first and second members respectively, a pivotal mounting for the third member arranged so

that the third member may pivot about a third axis, clamping means for causing relative movement between the first and second members thus to force parts of the driving surfaces on the first and second members into close proximity with adjacent parts of the driving surfaces on the third member, said parts providing drive areas through which drive takes place



between the first and second members on the one hand and the third member on the other hand and actuating means for pivoting the third member about the third axis thus to vary the distances of said drive areas from at least one of the first and second axes thus to vary the ratio of the drive, the drive areas being substantially symmetrically disposed about a line passing through the intersection of said first and second axes.

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**3,837,234**

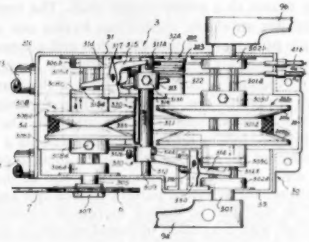
**BICYCLE WITH STEPLESS TRANSMISSION**

**Yau-Shieng Chao, Taipei, Taiwan, assignor to Stanley T. T. Wu and Yau-Shieng Chao, both of Taipei, Taiwan**

**Filed May 21, 1973, Ser. No. 361,999**

**Int. Cl. F16h** *55/22, 11/04*

**U.S. Cl. 74—217 B** **7 Claims**



Bicycle with stepless transmission wherein the transmission mechanism forms a part of the bicycle frame, and a remote control mechanism with a shifting lever is installed right under the steering handle, the remote control mechanism comprising a rotatable plate with said shifting lever and a pair of discs, the remote control mechanism being connected to the transmission mechanism through a pair of cables and a pair of spring biased discs which store mechanical energy and release it later for changing the depth of grooves of a pair of V sheaves that in turn change the speed of the rear wheel of the bicycle.

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**3,837,235**

**HYDROSTATIC TRANSMISSION CONTROL**

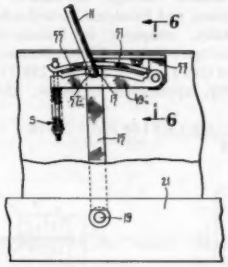
**Merle H. Peterson, Livonia, Mich., assignor to Massey-Ferguson, Inc., Detroit, Mich.**

**Filed Feb. 12, 1973, Ser. No. 331,937**

**Int. Cl. G05g** *5/06*

**U.S. Cl. 74—531** **5 Claims**

A hydrostatic transmission control has a nut-cracker-like mechanism for engaging the control to hold it in a selected speed position. The control is arranged so that movement of the control away from neutral toward a maximum forward speed moves the member engaged by the nut-cracker-like



mechanism toward the pivot point of the same and thereby causing an increasing holding force to act to hold the same against movement.

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**3,837,236**

**LOCKING DIFFERENTIAL**

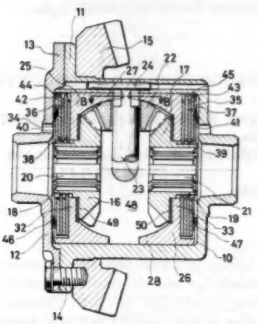
**Tooru Kagata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Pref, Japan**

**Filed July 20, 1972, Ser. No. 273,532**

**Claims priority, application Japan, July 20, 1971, 46-54349**

**Int. Cl. F16h** *1/44*

**U.S. Cl. 74—711** **6 Claims**



A locking differential applicable to a vehicle in which the relative rotation between a pair of side gears connected, respectively to the corresponding wheels of the vehicle is regulated by a pair of clutch means which are allowed to create their locking function by frictional resistance forces produced at the clutch means under the relative rotation, wherein the driving torque from an engine is transmitted to the side gears through a pinion shaft secured to a case rotatable thereby, and collar means disposed outside the side gears and the clutch means, the collar means being provided with cam surfaces thereon cooperating with the pinion shaft whereby the collar means are adapted for spreading toward the clutch means to further increase the frictional resistance forces.

3,837,237

## MULTI-SPEED CHANGE-SPEED TRANSMISSIONS FOR MOTOR VEHICLES

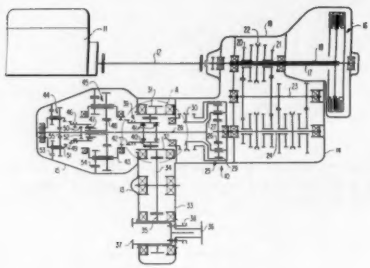
Heinrich Rossler, Baden-Baden; Wilhelm Korner, Gernsbach-Staufenberg; Rudolf Voshage, Gernsbach; Jurgen Wendeborn, Gaggenau, and Friedrich Fortenbacher, Obertsrot, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Oct. 12, 1972, Ser. No. 296,776

Claims priority, application Germany, Oct. 12, 1971, 2150674

Int. Cl. F16h *37/06, 37/10*

U.S. Cl. 74—740 34 Claims



A multi-speed transmission for motor vehicles, especially for tractors or similar commercial vehicles, which includes a main transmission and a distributor transmission driving the axles; the transmission is thereby so arranged that the distributor transmission is disposed at least approximately in the vehicle center and the main transmission is located on the side of the distributor transmission opposite the driving engine while an auxiliary transmission for crawling and snail speeds is adapted to be subsequently installed on the side of the distributor transmission facing the driving engine.

3,837,238

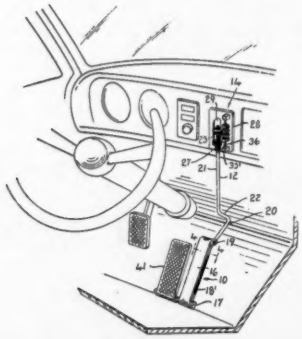
## COMBINED FOOT-REST AND SPEED CONTROL UNIT FOR VEHICLES

George Errington Walsh, 30 Kew Beach Ave., Toronto, Ontario, Canada

Filed May 18, 1970, Ser. No. 38,198

Int. Cl. G05g *1/14*

U.S. Cl. 74—526 7 Claims



A combined foot-rest and speed control unit for vehicles comprises a pivotally mounted foot member locatable adjacent the vehicle's accelerator pedal. Linkage extending from engagement with the foot-rest connects with settable speed indicating means mounted remote from the foot-rest and in a location readily available to the driver. Restraining means are provided whereby the foot-rest position can be selectively adjusted relative to the vehicle such that by moving the accelerator pedal into planar relationship with the foot-rest the speed of the vehicle is adjusted to that speed indicated by the indicating means.

3,837,239

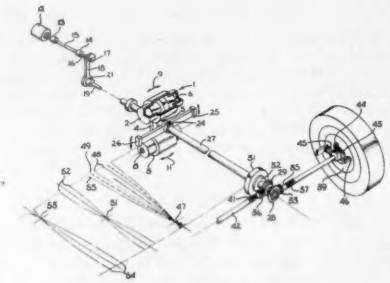
## TORQUE CONVERTER TRANSMISSION SYSTEM

Albert G. Bodine, 13180 Mulholland Dr., Beverly Hills, Calif. 90210

Filed Sept. 18, 1972, Ser. No. 290,217

Int. Cl. B60k *35/00*

U.S. Cl. 74—843 20 Claims



A kinetic energy transmission system incorporating a novel torque converter for controllably coupling a torsional oscillatory power source to a rotary output shaft. The torque converter comprises an elastic torsion bar having one end connected to the power source and the other end connected to a unidirectional rotary clutch. The oscillatory power source generates a resonant sonic wave pattern in the torsion bar. The clutch converts the torsional vibration output into unidirectional rotary motion at the output shaft. The application of a torque load to the output shaft acts as a restraint which is reflected back through the clutch so as to present an increased sonic impedance at the output end of the torsion bar. This causes the resonant pattern (nodes and anti-nodes) of the bar to shift and to deliver increased torsional force, commensurate with decreased torsional motion at the output shaft.

3,837,240

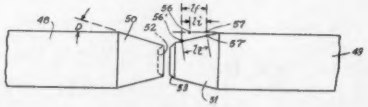
## CUTTING TOOL FOR THE CONTINUOUS MACHINING OF METALS AND THE METHOD OF MAKING SAME

William L. Mundy, St. Louis, Mo., assignor to O'Fallon Investment Company, Maryland Heights, Md.

Continuation-in-part of Ser. No. 45,357, June 11, 1970,. This application Nov. 8, 1972, Ser. No. 304,771

Int. Cl. B21k *21/00*; B26d *1/00*; B23b *3/00*

U.S. Cl. 76—101 A 17 Claims



A cutting tool made of a material having a high red hardness for the continuous machining of metals and having a geometry

determined by the change in measurements of a sample of the metal being machined when the sample is externally loaded to failure. The sample is subjected to a tensile load to produce the failure. Elongation and neck down are caused in the failure area according to the ductility of the metal. The effective cutting or rake angle of the cutting tool is established as a function of the elongation and neck down of the sample. The relief angles of the cutting tool geometry are determined to maintain a self-sharpening cutting edge under the abrasive characteristics of the workpiece material and erosion characteristics of the cutting tool material for given machining conditions.

The effective rake angle of the cutting tool is also established as the minimum angle producing chips of maximum hardness during the machining operation.

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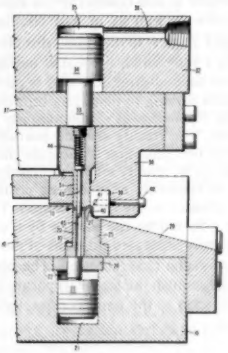
**3,837,241**

## PROCESS FOR COLD FORMING A SAW CHAIN CUTTER LINK

**Werner Weiss, Burlington, Ontario, Canada, assignor to Sabre Saw Chain (1963) Ltd., Burlington, Ontario, Canada**

**Filed Oct. 11, 1972, Ser. No. 299,610**
**Int. Cl. B23d** *63/00*
**U.S. Cl. 76—112** **29 Claims**



A process is disclosed for cold forming saw chain cutter links from steel strip in continuous operation in a single progressive die comprising punching and cutting the steel strip to form flat blanks corresponding to the desired cutters, clamping the body portion of each blank between first and second opposing clamping members adapted for reciprocable motion laterally with respect to the blank with the shank and toe portion of the blank extending outwardly from between the clamping members, deflecting the shank portion by striking it against a first anvil surface disposed laterally adjacent the shank portion, and wiping the metal of the toe portion of the blank along a second anvil surface substantially perpendicular to the body portion of the blank adjacent the first anvil surface with a carbide wiping block.

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**3,837,242**

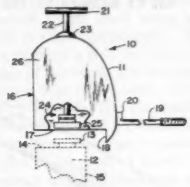
## DEVICE FOR REMOVING RADIATOR CAPS

**Lester E. Harper, 1111 E. 49th St., Odessa, Tex. 79762**

**Filed Jan. 26, 1973, Ser. No. 326,846**
**Int. Cl. B67b** *7/44*; **B25b** *29/00*
**U.S. Cl. 81—3.1 R** **4 Claims**

A device for safely removing radiator caps from hot radiators comprising a shield member which can be supported from the radiator and which includes a top and a side wall with a seal being disposed within the top.

A shaft having a handle end and a cap engaging end is slidably received through the seal so that it can be moved into engagement with a cap on a radiator to enable the cap to be



remotely manipulated by the handle, thereby enabling its removal while the shield means prevents hot water flowing from the radiator from scalding the operator.

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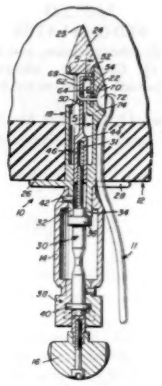
**3,837,243**

## RUBBER-MATERIAL INSERTER

**Wilburt W. Mays, 2020 N. 8th St., Philadelphia, Pa. 19122**

**Filed May 24, 1973, Ser. No. 363,409**
**Int. Cl. B60c** *25/16*
**U.S. Cl. 81—15.7** **15 Claims**



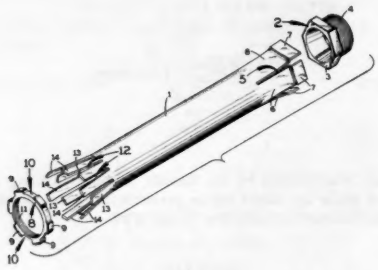
A tool for inserting a headed rubber plug, and the like, into an inflatable device has a body formed by an elongated hollow cylinder with spaced first and second end portions and an opening provided in a wall of the cylinder adjacent the first end portion. A conical head is attached to the cylinder at its first end portion, with an apex of this conical head arranged pointed away from the cylinder for facilitating insertion of the apparatus into an opening of an inflatable member to be repaired. A manually manipulatable clamp has a cutting edge and associated wedge arranged in the cylinder for selective engagement with the tail portion of an insert member inserted into the cylinder through the wall opening for selectively severing and holding the tail portion. The wall of the cylinder in which the opening is provided is thicker than the other portions of the cylinder wall to permit a recess to be defined therein and arranged about the wall opening to receive the head or enlarged portion of an insert member. When the tail portion has been severed from the remainder of the insert member adjacent its head, the tail portion will be retained by cooperation of the wedge with a V-shaped projection extending from an inner wall surface of the cylinder.

3,837,244

## TUBULAR SOCKET WRENCH FOR ENGAGING AND ROTATING THREADED MEMBERS

Enos L. Schera, Jr., 8254 S.W. 37 St., Miami, Fla. 33155

Filed Sept. 17, 1973, Ser. No. 397,893
Int. Cl. B25b *13/52, 13/00*
U.S. Cl. 81—64 2 Claims



A tubular wrench of predetermined length having an integral formation at one or both ends thereof formed to spring hold a predetermined head of a threaded nut of predetermined size and manually positioning and rotating same off or on a mating threaded member.

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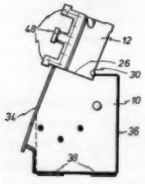
3,837,245

## BED OF A LATHE

Hermann Schuler, Rechberghausen, and Bruno Zeller, Weissenstein, both of Germany, assignors to Gebruder Boehringer Gesellschaft mit beschrankter Haftung, Goppingen, Germany

Filed Oct. 17, 1973, Ser. No. 407,149
Claims priority, application Germany, Nov. 15, 1972, 2256029
Int. Cl. B23b *17/00*
U.S. Cl. 82—32 5 Claims



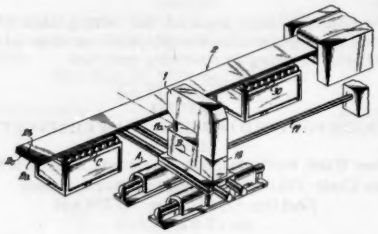
A bed of a lathe comprises a concrete base block and a metal body provided with guide ways for guiding movable lathe elements such as bed slides or the like. The guide-ways are formed by horizontal parallel grooves provided in the front face of the metal body, each groove having opposite side walls and a bottom wall. The metal body has a bottom face fixed on a conforming top surface of the concrete block by a plastic adhesive which constitutes the sole and exclusive means for transferring forces between the metal body and the concrete block.

3,837,246

## METHOD OF AND MACHINE FOR SEVERING COMPOUND PLATES

Franz Juditzki, Kreuztal-Buschhutten, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed June 19, 1972, Ser. No. 264,128
Claims priority, application Germany, June 18, 1971, 2130249
Int. Cl. B29c *17/10*; B23d *53/00*
U.S. Cl. 83—26 7 Claims



Elongated compound plates are severed at desired intervals in a bandsawing machine wherein the frame for a travelling saw band is movable in and counter to the direction of movement of the plates as well as in and counter to a second direction at right angles to the first direction. The frame further supports a tool which is located behind the band, as considered in the second direction, and is provided with two deburring surfaces serving to penetrate into the kerf which is formed while the frame moves simultaneously in the first and second directions. The freshly severed portions of plates are accelerated in the first direction to increase the width of kerfs so that the band can be readily retracted counter to the second direction prior to returning to a starting position by moving with the frame counter to the first direction. The widening of the kerf can be effected by the tool or by a conveyor which receives successively separated portions of moving plates and accelerates them in the first direction. The plates are free to catch up with and to push the freshly separated portions in the first direction as soon as the band is retracted counter to the second direction.

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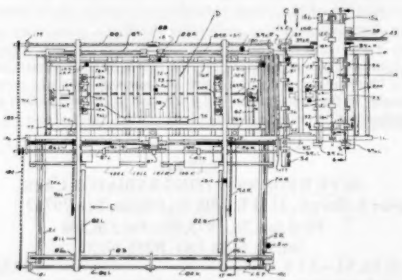
3,837,247

## MACHINE FOR TRIMMING THE EDGES OF PANELS

Donald B. Morse, and Bernard A. Pribish, Joliet, both of Ill., assignors to Kemlite Corporation, Joliet, Ill.

Division of Ser. No. 99,135, Dec. 17, 1970, Pat. No. 3,769,864.
This application June 14, 1973, Ser. No. 369,955
Int. Cl. B65h *35/02*
U.S. Cl. 83—156 5 Claims



A machine for trimming the edges of panels wherein a conveyor mechanism passes the panels past a pair of saws for

trimming the edges of the panels, and including a pair of rolls forward of the saws and between which the panels pass, the lower one of these rolls having a guideplate with an edge extending upwardly adjacent a sawed edge of the panel to guide the panel and maintain it in alignment.

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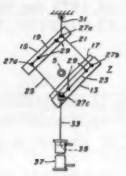
**3,837,248**

## PARISON CUTOFF AND SEALING APPARATUS

**Nickolas N. Sokolow, Roscoe, Ill., assignor to Plasti-Mac, Inc., Longwood, Fla.**

**Filed Nov. 29, 1972, Ser. No. 310,248**
**Int. Cl. B26d** *5/12*
**U.S. Cl. 83—375** **9 Claims**



A parison cutoff and sealing device in which a pair of shearing members disposed on either side of a tubular thermoplastic extrusion are diagonally advanced toward each other in a plane substantially transverse to the tube axis thereby severing the parison through the application of shearing forces. The shearing members are maintained parallel to each other throughout their relative movement by a frame comprising four links pivotal connected to form a parallelogram. By squeezing the heated tubular extrusion between blunt shearing members, one of which carries a knife blade, the leading edge of the tube may be sealed as the parison is cut off.

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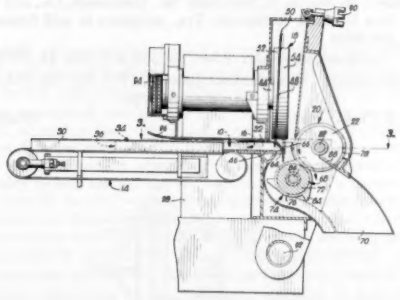
**3,837,249**

## MACHINE FOR SEVERING MEAT SLABS

**Marshall Long, Leawood, Kans.; Lewis F. Alley, Kansas City, and William A. Reynolds, Galena, both of Mo., assignors to Marlen Research Corporation, Overland Park, Kans.**

**Division of Ser. No. 188,907, Oct. 13, 1971, Pat. No. 3,777,600. This application May 8, 1973, Ser. No. 358,401**
**Int. Cl. B26d** *1/56;* **B23d** *25/04;* **B26d** *7/06*
**U.S. Cl. 83—408** **10 Claims**



Frozen meat slabs or the like are subjected to the constantly rotating action of a blade provided with a single convolution having a helical cutting edge for severing the slab into elongated strips whose widths are essentially the same as the distance which the slab is advanced during each revolution of the blade, and to the action of a gang of constantly rotating, peripherally sharpened discs which slice the strips into polygonal pieces, e.g., cubical, for further processing, as in stew. Each transverse kerf produced by the blade is initially concave and is progressively increased in depth and in length toward both side edges of the slab while the latter is firmly supported therebeneath by an anvil along which the blade helix causes the slab to slide continuously. The final cutting action for producing each strip is in the form of a shear during which the cutting edge of the blade acts in point contact with a concave, terminal shear edge of the anvil, causing the severed strip to fall away from the slab. The descending strips are intercepted and successively forced forwardly into the bank of discs, without interruption, along an arcuate course, in the same general direction as the path of travel of the slab, by a lobed feeder interleaved with the discs and rotating continuously about an axis parallel with the axis of rotation of the discs but in a direction opposite to the direction of disc rotation.

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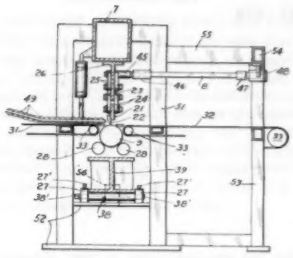
**3,837,250**

## SUPER SPEED VENEER CLIPPERS

**George A. Lumn, Puyallup, Wash., assignor to Globe Machine Manufacturing Co., Ltd., Tacoma, Wash.**

**Filed Oct. 19, 1972, Ser. No. 299,040**
**Int. Cl. B27l** *5/08;* **B26d** *5/12, 5/18*
**U.S. Cl. 83—424** **3 Claims**



This veneer clipper comprises a frame, infeed and outfeed veneer conveyor means, a reciprocable clipper blade, an anvil positioned so the blade will cut the moving veneer against it, pneumatic means for imparting cutting strokes to the blade at super speed, blade actuating means connecting the pneumatic means with the blade and spring means cooperating with the blade actuating means in such a manner as to make possible super speed cutting strokes of the blade, while at the same time, minimizing shock and vibration by cushioning retractile strokes of the blade.

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**3,837,251**

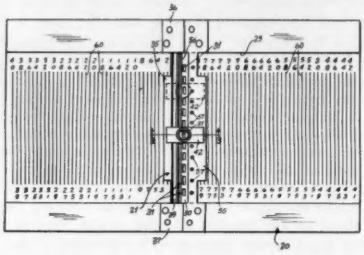
## CARD PUNCH

**Stanley T. Schneider, 7246 Pershing Ave., University City, Mo. 63130**

**Filed Dec. 7, 1972, Ser. No. 312,962**
**Int. Cl. B26f** *1/14*
**U.S. Cl. 83—449** **12 Claims**

A pocketable computer card punch, having a base plate grooved to the width of the card and having a row of die holes across the groove and spaced to correspond to the rows on the card, and a punch slidably mounted on the base to be displaced across the groove above the die holes, with a detent for positioning the punch, located to correspond to each die hole position, and graduations on the base corresponding to the

columns on the card, all so that the card may be slid across the base, guided by the groove to bring a selected column over the row of dies as indicated by the appropriate graduations, and



the punch then moved across above the card to the desired row, detained there accurately positioned, and operated to punch a hole in the card at the selected number.

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**3,837,252**

**DEVICE FOR SEVERING YARNS IN YARN CLEANERS**

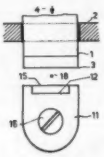
**Peter Brassel, Uster, Switzerland, assignor to Zellweger, Ltd., Uster, Switzerland**

**Filed Nov. 24, 1972, Ser. No. 309,481**

**Claims priority, application Switzerland, Nov. 26, 1971, 17221/71**

**Int. Cl. B26d** *7/20*

**U.S. Cl. 83—658** **4 Claims**



A device for severing yarns in yarn cleaners includes a movable knife and an anvil forming a striking support for the knife, the striking surface of the anvil facing the knife edge being harder in the peripheral zones thereof than in the central zone contacted by the knife during the cutting operation so that the knife will retain its sharp edge for a long period of use.

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**3,837,253**

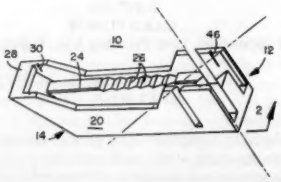
**POSTER FRAME EXTRUSION CUTTING GUIDES**

**John Whit Slemmons, 900 N. Broadway, Suite 725, Santa Ana, Calif. 92701**

**Filed Mar. 8, 1973, Ser. No. 339,438**

**Int. Cl. B23b** *51/10*; **B27g** *5/02*

**U.S. Cl. 83—762** **9 Claims**



An E-shaped cross-section guide for cutting art frames and similar materials is presented. The guide comprises 3 parallel ridges coupled to a base and spaced so that the 2 parallel planar protions of a poster frame slidably but snugly fit over the center ridge. One end of the tool is cut off at a 90° angle for cutting straight-cut extrusions. The other end is cut off at a 45° angle for cutting extrusions at a 45° angle. Near the 90° end, slots are cut into the three ridges permitting the guide to be used for mitering poster frames. In operation, the poster frame is slide onto the guide and the end of the poster frame is aligned with the selected part of the guide. The guide then supports the extrusion and the blade cutting the poster frame.

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**3,837,254**

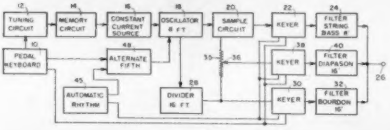
**ORGAN PEDAL TONE GENERATOR**

**James S. Southard, Elkhart, Ind., assignor to C. G. Conn, Ltd., Elkhart, Ind.**

**Filed Apr. 30, 1973, Ser. No. 355,780**

**Int. Cl. G10h** *1/00, 5/00*

**U.S. Cl. 84—1.01** **16 Claims**




Tone generator system including an oscillator comprising a capacitor and unijunction transistor, with pedals applying potentials representing different notes to a constant current source for controlling the same to charge the oscillator capacitor at different rates for producing the frequencies of different notes. A second control of frequency is provided by changing the potential applied to the gate of the unijunction transistor. The gate potential can be reduced to change the oscillator from the frequency of the root note of a chord to that of the 5th note of the chord, for playing a bass rhythm. The oscillator frequency may be in the frequency range of 8 foot tones, and the sawtooth wave may be directly keyed for providing string bass sounds. A frequency divider triggered by the oscillator produces a square wave at one half the frequency, which is summed with the sawtooth wave to provide a sawtooth wave at one half the frequency, or in the 16 foot tone octave. This may be keyed and filtered for providing a 16 foot diapason tone. The square wave may also be keyed and filtered to provide a 16 foot bourdon tone.

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**3,837,255**

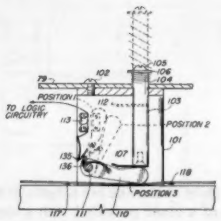
**PORTABLE GUITAR CHORDER**

**Robert M. Starns, 02 Mauroner Dr., Hammond, La., and William W. Witt, Richmond, Tex., assignors to said Starns by said Witt**

**Continuation-in-part of Ser. No. 300,442, Oct. 25, 1972, abandoned. This application June 28, 1973, Ser. No. 374,751**

**Int. Cl. G10d** *3/00*

**U.S. Cl. 84—317** **19 Claims**




A portable guitar chording device using battery powered logic and selection circuitry is provided for producing desired

chords on a conventional guitar or other stringed musical instruments. Two sets of switches, a key signature set and a chord type set operated by one hand activate the logic circuitry to cause selection of appropriate interposer selector bars by interaction of electromagnets with permanent magnets carried on the interposer. String depression plungers are mechanically moved from a position away from the strings to a position toward the strings by depression of a hinged plate member by this same hand. However only those string-fret locations in which the interposer selector means are activated by the logic circuitry cause actual depression of the strings. The second hand of the player strumming all six guitar strings then produces harmonious chords.

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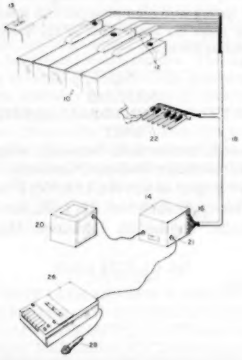
**3,837,256**

## SIGHT AND SOUND MUSICAL INSTRUMENT INSTRUCTION

**Cecil F. Gullickson, 2018 Fosgate Dr., Winter Park, Fla. 32789**

**Filed Sept. 21, 1971, Ser. No. 182,484**
**Int. Cl. G09b** *15/08*
**U.S. Cl. 84—478** **16 Claims**



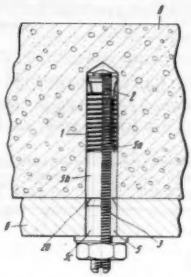
A sight and sound instructional arrangement for use with certain musical instruments, including keyboard instruments and fretted instruments, involving the use of illumination means associated with certain keys or frets of such instruments, in conjunction with means sensitive to certain coded information and connected to turn on the illumination means upon such information being received by a binary sequential decoding system utilized herein. This arrangement is particularly suitable for use by a beginning musician inasmuch as by the use of this invention, he or she can see certain keys or frets illuminated at such time as the decoder means receives the preascertained information. One preferred embodiment of this invention involves the use of instructional tapes containing voice instruction for the beginning musician as well as coded information for causing keys or frets appropriate to the instruction to be illuminated at the proper time. Other facets of my invention include the tapes containing rhythm information such that the tones provided by the depressing of the keys is interrupted in a pre-ascertained manner, so as to provide desired rhythm patterns. Rhythm information can also be used to key percussion or drum sounds.

**3,837,257**

## ANCHORING DEVICE

**Artur Fischer, Altheimer Strasse 219, D-7241 Tumlingen, Germany**

**Filed Aug. 15, 1972, Ser. No. 280,885**
**Claims priority, application Germany, Aug. 17, 1971, 2141079; Sept. 14, 1971, 2145918; Dec. 15, 1971, 2162255; Dec. 14, 1971, 2164587**
**Int. Cl. F16b** *13/06*
**U.S. Cl. 85—64** **15 Claims**



A helically convoluted spring sleeve of soft wire is insertable into a bore hole. An expander member has one part located forwardly of the leading end of the sleeve, and another part located in the leading end and tapering towards the trailing end of the sleeve. A cap sleeve has one section located outside and in abutment with the trailing end of the sleeve, and another part located within the trailing end. An expanding screw extends through a central passage of the expanding sleeve and through the spring sleeve into engagement with the expander member so that the latter can be drawn into the spring sleeve for radially expanding the same.

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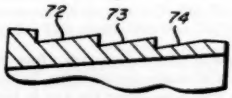
**3,837,258**

## ROCK BOLTS

**Chester I. Williams, 347 Greenbriar, S.E., Grand Rapids, Mich. 49506**

**Continuation-in-part of Ser. No. 8,345, Feb. 3, 1970. This application July 3, 1972, Ser. No. 268,839**
**Int. Cl. F16b** *13/04*
**U.S. Cl. 85—75** **1 Claim**

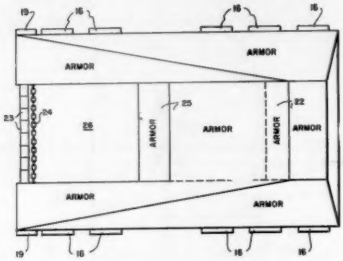



A method of reinforcing a rock formation with rock bolts establishing a locked-in pre-stress condition inhibiting the initiation of movement of the formation, and structural features of a rock bolt assembly capable of use in the practice of the method.

## 3,837,259
## COMBAT TRACKED VEHICLE SIGNATURE DUPLICATOR

David A. Vaughn, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1973, Ser. No. 374,605
Int. Cl. F41n *11/12*
U.S. Cl. 89—1 M 3 Claims

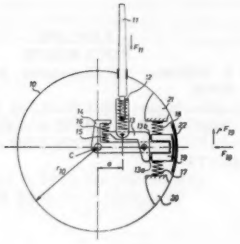



A tracked vehicle for use in mine detonation comprising two endless tracks and two final drives on each side of the vehicle. The final drives are mounted mid-vehicle and a crew area is mounted aft of the final drives.

## 3,837,260
## PIVOTABLE TURRET WITH A FIRING WEAPON ARRANGED ECCENTRICALLY

Sven Birger Agren, Ornskoldsvik, and Elof Hjalmar Rowa, Gullanget, both of Sweden, assignors to AB Hagglund & Soner, Ornskoldsvik, Sweden

Filed May 2, 1973, Ser. No. 356,487
Claims priority, application Sweden, May 5, 1972, 5938/72
Int. Cl. F41f *21/00*
U.S. Cl. 89—37 H 6 Claims

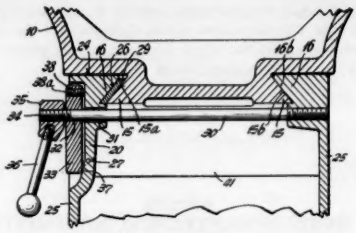


A turret is mounted for rotation on a foundation and provided with an eccentrically mounted gun. In order to prevent the turret from traversing when the gun is fired or is being restored after recoil, the device is provided with a friction shoe which is engageable with a friction member fixed on the foundation. A lever arrangement is provided, which, during recoil and counterrecoil, presses the friction shoe against the friction member and prevents the turning of the turret. The arrangement includes a link structure which has bosses engageable with the friction shoe on turning in either direction and springs for positioning the friction shoe and the lever.

## 3,837,261
## MILLING MACHINE KNEE CLAMP

William M. Hoddinott, Milford, Conn., assignor to Textron Inc., Providence, R.I.

Filed Mar. 29, 1973, Ser. No. 346,135
Int. Cl. B23c *9/00*; B23q *1/26*
U.S. Cl. 90—58 A 2 Claims

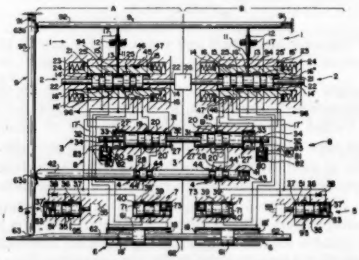


There is disclosed clamps for taking up any clearance between the dovetail on the column of a milling machine and the companion ways in the knee and lock the knee to the column against all swaying movement. This is accomplished by having vertically spaced clamping portions on the side of the knee, each clamping portion containing a part of the ways, which ride in the dovetail on the column, separated from adjacent portions of the knee and providing a screw which, when operative, will spring said clamping portion inwardly to clamp portions of the ways on both sides of the knee against both sides of the column dovetail.

## 3,837,262
## REDUNDANT ELECTROHYDRAULIC REGULATING UNIT

Dieter Hedermann, Immenstaad, Germany, assignor to Dornier A.G., Friedrichshafen/Bodensel, Germany

Continuation-in-part of Ser. No. 115,968, Feb. 17, 1971, abandoned. This application Nov. 10, 1972, Ser. No. 305,321
Claims priority, application Germany, Mar. 26, 1970, 2014661
Int. Cl. F15b *13/16*
U.S. Cl. 91—365 5 Claims



This invention relates to a redundant electrohydraulic regulating system for actuating control surfaces, rudders and the like of aircraft, the input signals of which are transmitted electrically by the pilot and by means of regulating and/or stabilizing devices, comprising, at least two servo chains or chains of regulating units, for purposes of detecting errors and/or malfunctions of one of the servo chains and preventing the inoperative servo chain from affecting the operation of the operative chain, each of the servo chains including, a servro or preliminary control valve; a main control valve, whose dis-

tributing slide valve is displaced or shifted in response to the operation of the servo or premilinary control valve; a fluid motor, which is displaced or moved by a pressure medium whose pressure is controlled by movements of the distributing slide valve of the main control valve; a position valve, whose distributing slide valve is mechanically coupled to the piston of the fluid motor and a differential pressure valve, which is actuated by the servo or preliminary control valve and, in conjunction with the position valve, interrupts the supply of pressure medium to the pressure chambers of the fluid motor of a faulty servo chain.

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**3,837,263**

**APPARATUS FOR PRODUCING PAPER CYLINDERS FOR NURSING SEEDLINGS**

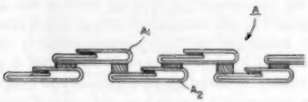
**Katsumi Kobayashi; Reiji Takeda, and Kimiaki Sato, all of Hokkaido, Japan, assignors to Nippon Tensai Seito Kabushiki Kaisha, Tokyo, Japan**

**Filed Feb. 23, 1973, Ser. No. 335,074**

**Claims priority, application Japan, Mar. 4, 1972, 47-22491**

**Int. Cl. B31b** *17/74;* **B31d** *3/04*

**U.S. Cl. 93—1 H** **6 Claims**




An apparatus for continuously producing containers for the nursing of plant seedlings which are bottomless and square or hexagonal in horizontal cross-section. The apparatus comprises pasting means for continuously applying paste transverse to a tape assembly in the form of lines or dotted lines, means for forming substantially non-pasted units at certain fixed intervals, means for transferring the pasted tape assembly, means for cutting the tape assembly into unit lengths, and rotary laminating means adapted to receive the unit length pieces of tape one by one and laminate them together, all of these means being interlocked with one another to rotate responsive to each other.

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**3,837,264**

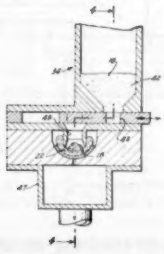
**INTERMITTENT PROCESS FOR MANUFACTURE OF A MULTIPLE FILTER ROD HAVING SPACED POCKETS CONTAINING PARTICULATE MATERIAL**

**John H. Sexstone, Middletown, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.**

**Filed May 7, 1973, Ser. No. 358,127**

**Int. Cl. A24c** *5/50*

**U.S. Cl. 93—1 C** **20 Claims**



A filter rod making machine is modified to include a dispensing device for granular or particulate material which is fed through spaced apertures to a substantially U-shaped web of selected filter material. The linear movement of the filter material is momentarily stopped to facilitate the reception of the granules. Towards this end, metered amounts of the gravity fed granules are delivered to the spaced apertures by a reciprocal dispensing plate actuated during the dwell period that the web is stationary. Thereafter the U-shaped filter material with spaced charges of granules are shifted longitudinally away from the granule application station in order that a corresponding length of the filter rod may receive spaced charges of the granules. This intermittent motion of the web through the granule application station is repeated. While the tow is moved with intermittent motion through the application station, it is continuously fed from a tow opening unit through a plasticizer applicator and over a feed drum.

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**3,837,265**

**DEVICE FOR SECURING SLITTER OR SCORER HEAD**

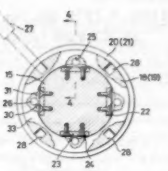
**Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Kabushiki Kaisha (Rengo Co., Ltd.), Osaka-shi, Osaka-fu, Japan**

**Filed Mar. 5, 1973, Ser. No. 338,185**

**Claims priority, application Japan, Dec. 18, 1972, 48/2796**

**Int. Cl. B31b** *1/20;* **B23d** *19/04;* **B26d** *1/24*

**U.S. Cl. 93—58.2** **4 Claims**




A device for securing a slitter or scorer head to a rotary shaft. The head is slidably mounted on the rotary shaft and a constriction means is provided between the head and shaft. The constriction means comprises a constriction element provided on the inner periphery of the head, and a flat support face provided on the outer periphery of the shaft along the longitudinal axis thereof. The constriction element is projected from the inner periphery of the head into an aperture formed by the flat support face and the inner periphery of the head. The aperture has a section like a segment of a circle and is adapted to be higher than the projection. The slight rotation of the head in respect to the shaft causes the constriction element to pressure-contact with or separate from the flat face of the rotary shaft, the head thereby being fixed or released from fixing.

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**3,837,266**

**APPARATUS FOR FOLDING OF ENVELOPE BLANKS REQUIRING VARYING NUMBERS OF FOLDING OPERATIONS**

**Karl-Heinz Honsel, Heidelberger Weg 15, Bielefeld, Germany**

**Continuation-in-part of Ser. No. 228,398, Feb. 22, 1972, Pat. No. 3,793,926. This application May 21, 1973, Ser. No. 360,163**

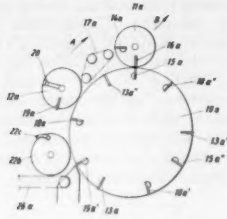
**Claims priority, application Germany, Feb. 23, 1971, 2108484; May 20, 1972, 2224810**

**Int. Cl. B31b** *1/56*

**U.S. Cl. 93—62** **4 Claims**

A first cylinder is provided on its periphery with circumferentially spaced alternately arranged folding grippers and blades. A second and a third cylinder each cooperate with the first cylinder and define therewith one and another folding station. The second and third cylinders are respectively provided with alternately arranged folding grippers and blades, and with blades above, on their respective circumference, and these

second and third cylinders are of identical dimensions and are interchangeable. Drive means is provided for rotating the cylinders about respective parallel axes. A pressing belt



presses an envelope blank against the periphery of the first cylinder, and a removing arrangement removes folded blanks from a terminal one of the folding stations.

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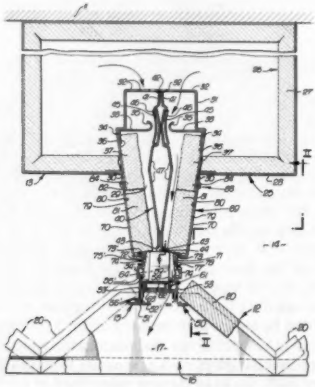
**3,837,267**

**ADAPTER MEANS FOR COUPLING A PREPOSITIONED AIR PLENUM CHAMBER TO A LATER POSITIONED AIR BAR**

**Robert R. Lambert, Glendora, Calif., assignor to Wehr Corporation, Milwaukee, Wis.**

**Filed Mar. 9, 1970, Ser. No. 17,516**
**Int. Cl. F24f *13/06***
**U.S. Cl. 98—40 D** **8 Claims**



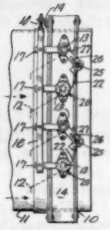
A soffit-mounted prepositioned air plenum chamber with an outlet over an air bar provided as part of a suspended ceiling installation, and an adapter means therefor which includes a plurality of panel members, each with a bottom flange which is snapingly secured into a lateral channel upper extension of an inverted T-bar member in the air bar, an upper flange which is secured to the associated outlet wall of the plenum chamber, and middle portion which provides one side of an air directing throat to direct flow of air from the chamber through the air bar and into the room below. The panel members may be located in opposed pairs in longitudinal array with spaces between selected adjacent panel member pairs with blank-off members and end-closing members therebetween to close the outlet of the air plenum chamber to the air bar while opening the air bar to the attic space between the soffit and the suspended ceiling to divide the air bar into supply sections and return sections. The panel members, blank-off members and end closing members are easily removed and replaced to permit the interchanging of supply sections and return sections to give the greatest possible flexibility to the ventilating system.

**3,837,268**

**PROTECTIVE DAMPER FOR GAS EXHAUST DUCT**

**Raymond L. Alley, Toledo, Ohio, assignor to The American Warming & Ventilating, Inc., Toledo, Ohio**

**Filed Nov. 9, 1972, Ser. No. 305,086**
**Int. Cl. F24f *13/16***
**U.S. Cl. 98—110** **3 Claims**



A damper that is normally biased toward open position against the pressure of air flowing through the damper and rapidly closed by the increase of such pressure resulting when pressure exteriorly of the damper abruptly drops to a predetermined level. The damper comprises a plurality of parallel blades mounted on parallel axes and coupled to each other for movement between a closed position with the blades lying generally in a vertical plane across the damper and normally open position with the blades lying in parallel spaced planes inclined into the air flow. Means are connected to the blades for biasing them inwardly toward open position against the pressure interiorly of the damper caused by the air flow which tends to swing the blades in an outward direction toward closed position. When the atmospheric pressure on the outside of the damper drops, as by the presence of the negative phase of a tornado, the damper closes immediately.

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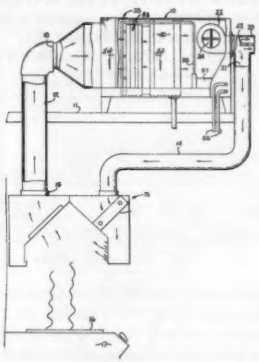
**3,837,269**

**EFFLUENT VENTILATION AND CLEANING APPARATUS**

**Albert Sweet, Northridge, and Arnold S. Kaufman, Studio City, both of Calif., assignors to Elster's, Inc., Los Angeles, Calif.**

**Filed Nov. 22, 1972, Ser. No. 308,688**
**Int. Cl. F23j *11/00***
**U.S. Cl. 98—115 K** **3 Claims**



An apparatus for ventilating kitchen exhaust fumes and treating the effluent from kitchens to remove air polluting constituents from the effluent. The apparatus includes a housing through which the exhaust is pulled by a fan at the outlet side of the housing. The housing has an inertial impingement

degreaser section with means for collecting and disposing of grease and other aerosols extracted from the fumes. The exhaust then passes through an electrostatic precipitator section which removes remaining contaminants after which the treated exhaust is exhausted to the atmosphere or partially recirculated through the kitchen cooking area. If required, a device for odor removal by absorption, adsorption or ozone treatment is added in a plenum after the fan.

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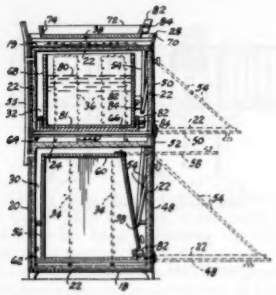
**3,837,270**

**PORTABLE ELECTRICALLY HEATED COMBINATION OVEN BOILER AND OPEN GRATE COOKING UNIT**

**Thomas V. Cooper, 2100 St. Charles Ave., Apt. 8-J, New Orleans, La. 70140**

**Filed Mar. 26, 1974, Ser. No. 454,975**
**Int. Cl. A47j 37/06, 37/12**
**U.S. Cl. 99—339** **6 Claims**



A portable electric cooking unit including an upright rectangular housing having a horizontal partition forming a lower door opened and closed oven compartment and an upper door opened and closed boiling compartment and having a griddle supported above its top wall. A closable baking and roasting container is freely received by the oven compartment and a plurality of upwardly open containers are removably received by the boiling compartment.

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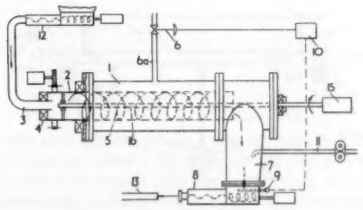
**3,837,271**

**HEAT TREATMENT OF FLOWABLE SOLIDS**

**David Teignmouth Shore, Banstead, and Granville Lewis Starkie, Crawley, both of England, assignors to The A.P.V. Company Limited, Crawley, Sussex, England**

**Division of Ser. No. 40,806, May 27, 1970, Pat. No. 3,700,468. This application May 26, 1972, Ser. No. 257,459**
**Int. Cl. A23l 3/22**
**U.S. Cl. 99—468** **6 Claims**



The specification discloses a method and apparatus for heat treatment, particularly sterilizing particulate solid material such as meat cubes or beans. The particles of solid material are positively fed by a conveyor, such as a screw conveyor, through a chamber with an atmosphere of steam or other heating gas, and the residence time determined by the positive feeding is such as to ensure that the required treatment in the chamber is completed.

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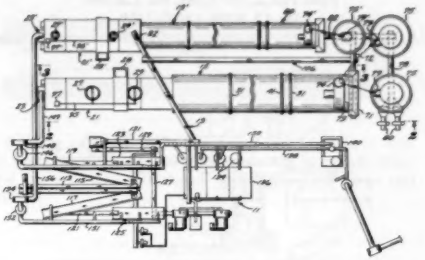
**3,837,272**

**MEAL DRYING POLLUTION CONTROL APPARATUS**

**Vincent J. Evich, San Pedro, Calif., assignor to Star-Kist Foods, Inc., Terminal Island, Calif.**

**Filed June 14, 1973, Ser. No. 369,791**
**Int. Cl. A23l 3/16**
**U.S. Cl. 9—483** **14 Claims**



Meal drying pollution control apparatus including an incinerator formed with a retention chamber having a burner at the inlet thereof and joining on its downstream end with a rotary dryer. Connected with the downstream end of the rotary dryer is a recirculation conduit which bifurcates into a reheat conduit connected with the upstream end of the retention chamber adjacent the burner and a residual heat conduit connecting with the downstream end of such a chimney is connected with the retention chamber downstream of the reheat conduit for exhausting incinerated exhaust to the atmosphere. The burner is controlled to maintain the recirculated gases entering from the reheat conduit above a predetermined temperature for a selected length of time to thereby incinerate substantially all the impurities therein so the incinerated gases may be exhausted to the atmosphere without substantial pollution thereof. A temperature sensor is located at the outlet to the dryer and controls valves disposed in the residual and reheat conduits to balance flow between such conduits to maintain the desired temperature in such dryer to provide for the desired drying temperature for meal run through such dryer.

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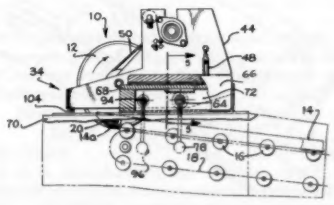
**3,837,273**

**ADJUSTABLE CUTTING ARRANGEMENT FOR FRUIT PITTING APPARATUS**

**David W. Mattos, Rt. 2, Box 861 Crosley Ave., San Jose, Calif. 95131**

**Filed Dec. 10, 1971, Ser. No. 206,625**
**Int. Cl. A23n 3/08**
**U.S. Cl. 99—555** **1 Claim**



Arrangement for cutting and pitting apricots, peaches, plums, and other drupe fruits which are individually and

sequentially moved along a number of V-troughs including a rotary power knife above each trough adjacent its terminal extremity which is relatively wide and formed by resilient surfaces to assure rolling movement of the fruits, each knife being supported for longitudinal and transverse adjustment to enable desired positioning for optimal cutting and pitting of the fruits during the operation.

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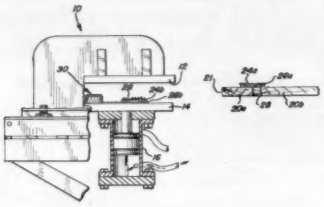
**3,837,274**

## MAGNETIC LOCATING DEVICE

**Edward F. Zaccard, Rt. 4, P.O. Box 68-A, Burlington, Wis. 53105**

**Filed Feb. 2, 1973, Ser. No. 328,904**
**Int. Cl. B30b** *13/00, 1/08*
**U.S. Cl. 100—35** **2 Claims**



Disclosed is a device for locating a nail plate or the like on the flat, magnetic platen of clamping apparatus. The clamping apparatus has a pair of movable platens which, when actuated, press the nail plate into lumber placed between the platens. The locating device includes a generally flat first leg portion and generally flat second leg portion joined together to define between inner edges of the leg portions an angle corresponding to the corner angle of the nail plate. Thus, during locating of the plate, the corner of the plate abuts both inner edges of the leg portions. This locating device is characterized by magnets attached near an outer edge of one of the leg portions. These magnets hold the locating device on one of the platens of the clamping apparatus. The thickness of the magnets is less than the thickness of the lumber into which the nail plate is being pressed. Consequently the magnets do not interfere with the operation of the clamping apparatus.

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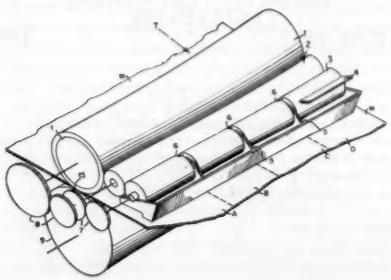
**3,837,275**

## MULTIPLE COLOR EMBOSSING OF FLOORING MATERIAL

**John S. Madsen, Belle Mead, N.J., assignor to GAF Corporation, New York, N.Y.**

**Filed Sept. 25, 1972, Ser. No. 291,994**
**Int. Cl. B41f** *5/04, 31/06*
**U.S. Cl. 101—23** **2 Claims**



An apparatus and method for embossing and printing on a web of flooring material making use of an embossing roller, transfer roller, and gravure roller. The gravure roller is a segmented roller, adapted to coact with a printing ink reservoir, provided with individual compartments matching in number the segments on the gravure roller. Multiple colors of ink are subsequently transferred to the flooring material in accordance with such predetermined segmented gravure roller to produce a material having a multi-color effect.

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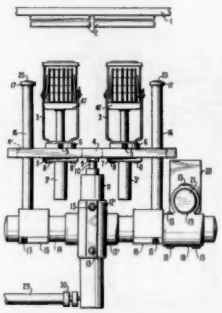
**3,837,276**

## INDICIA STAMPING MECHANISM

**Anderson R. Reichert, Thomasville, Ga., assignor to Harvard Enterprises, Incorporated, Thomasville, Ga.**

**Filed May 11, 1973, Ser. No. 359,605**
**Int. Cl. B41f** *17/00, 1/00*
**U.S. Cl. 101—41** **8 Claims**



In synchronism with wrapper applying means on a packaging conveyor pneumatically operated ink stampers precisely apply price indicia in prescribed areas of wrapped finished products or packages. The indicia stamping mechanism is characterized by a full range of adjustments to achieve maximum flexibility of operation. The mechanism also possesses simplicity and durability in a self-contained unit with simplified controls.

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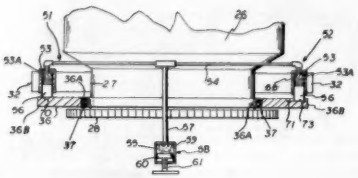
**3,837,277**

## FLUID SELF-BALANCING ROTARY SCREEN TENSIONING MOUNT

**David Jaffa, Fairlawn, and Sandor Szarka, Hawthorne, both of N.J., assignors to Precision Screen Machines Inc., Hawthorne, N.J.**

**Filed Aug. 25, 1972, Ser. No. 283,816**
**Int. Cl. B41f** *15/38;* **B41l** *13/04*
**U.S. Cl. 101—127.1** **15 Claims**



This disclosure is directed to a rotary screen printing head for a rotary screen printing machine and more particularly to a fluid balancing system for maintaining proper tension on a rotary screen and/or to compensate for any eccentricity of the head end portion of the screen during rotation. Also this dis-

closure is directed to the utilization of a radial thrust bearing for rotatably supporting the screen relative to its end thrust supports.

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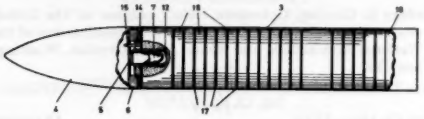
3,837,278

## ROCKET FOR FIRING AND SPREADING REFLECTING MATERIAL

Melker Emanuel Gustafsson; Yngve Bertil Stradalen, and Erik Gustav Ake Zander, all of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

Filed June 5, 1973, Ser. No. 367,313
Claims priority, application Sweden, June 16, 1972, 7596/72
Int. Cl. F42b *15/00*; C06d *1/04*
U.S. Cl. 102—34.4 7 Claims



A rocket for spreading reflecting material to achieve a radar echo comprises a rocket body having a rocket motor at one end thereof, and a rocket head containing the reflecting material at the other end thereof. The casing is locked to the rocket body by a locking mechanism which is adapted to be released by gas pressure generated by detonation of a separating charge. The locking mechanism includes an elongated tube adapted to support the reflecting material on its exterior, and operative to selectively form an interior gas channel between the separating charge and the front part of the casing under the control of a valve member.

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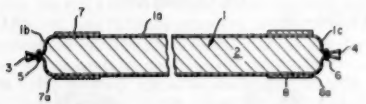
3,837,279

## BLASTING CARTRIDGE AND PRIMER

Harry G. Cooke, Jr., Pineville, W. Va., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1973, Ser. No. 337,934
Int. Cl. F42b *3/02*
U.S. Cl. 102—24 R 20 Claims



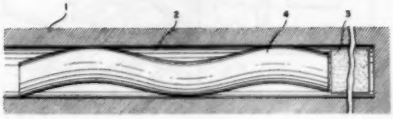
A blasting cartridge comprising a tube of plastic film filled with water-bearing explosive and gathered and closed at both ends has a sleeve or capsule over one or both ends, or a full-length sheath, e.g., of water-resistant paper or plastic, which forms an end abutment surface at one or both of the package ends that impedes cartridge override and jamming during string-loading of boreholes. A primer comprising a blasting cap embedded in this cartridge has the added advantage of improved integrity when punctured for the reception of the blasting cap.

3,837,280

## TAMPING CARTRIDGE MADE OF FILLED, ELONGATED POLYMERIC TUBING

Hans Lewer, Witten-Annen, Germany, assignor to Chemische Fabrik Kalk GmbH

Filed Jan. 26, 1973, Ser. No. 327,181. The portion of the term of this patent subsequent to Aug. 14, 1990, has been disclaimed.
Claims priority, application Germany, Jan. 26, 1972, 2203488
Int. Cl. F42d *1/08*
U.S. Cl. 102—30 5 Claims



A tamping cartridge for tamping explosive charges in bore holes which consists of a sealed plastic tubing essentially filled with a finely divided solid and a wall thickness of 50 to 100 microns.

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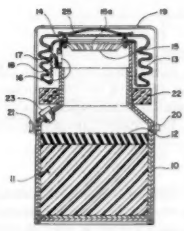
3,837,281

## THERMAL RADIATION EMITTER

Donald Edward Shaffer, Newark, Del.; Herbert W. D. Cassidy, Elkton, Md., and Walter G. Andrews, Wilmington, Del., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Apr. 25, 1969, Ser. No. 823,234
Int. Cl. B64b *1/44*, *1/62*
U.S. Cl. 102—35 3 Claims



A device is presented which emits infra heat rays at specific predetermined wave lengths and defines a particular cross sectional pattern of such heat emission so that the emission source can be both detected and identified by an infra red detector. A hot gas generant is employed to inflate a balloon of known cross section having a surface which is known to emit infra red heat rays within a certain selected range of wave lengths.

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3,837,282

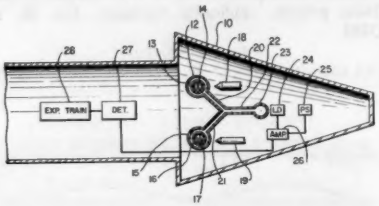
## ORDNANCE TIMER USING CHEMICAL LIGHT

Warren P. Morrow, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 6, 1973, Ser. No. 376,999
Int. Cl. F42c *19/00*, *11/00*
U.S. Cl. 102—70.2 R 7 Claims

Disclosed is a chemiluminescent ordnance timer. The device comprises essentially of a first ampule which contains a first reactive component, a second ampule containing a second reactive component, a mixing chamber for receiving both reactive components and for transmitting chemiluninescent light which is created by the mixture, a plurality of

capillary tubes for imparting a predetermined time delay to the reactive components on their way to the mixing chamber, and finally, means for detecting the chemiluminescent light and for actuating an appropriate mechanism. Each of the ampules containing the reactive components are designed to




break upon the application of a predetermined force such as a setback or a spin force which may be encountered in a projectile. Several safety features in the form of fluid sump means are provided along the capillary path to ensure that the detonator will activate only upon a predetermined sequence of events.

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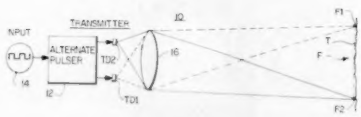
**3,837,283**

## ACTIVE OPTICAL FUZE

**Robert H. McCracken, Montgomery County, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed Aug. 3, 1973, Ser. No. 385,381**
**Int. Cl. F42c *13/02***
**U.S. Cl. 102—70.2 P** **8 Claims**




An active optical fuze is provided for detecting the transit of a target through a given focal plane and energizing a firing circuit in response to such event. A pair of optical transmitters are alternately pulsed at a known pulse frequency to illuminate two related foci on an approaching target. When the target is not at the focal plane a pair of optical receivers receive light reflected from both foci in-phase. When, however, the target is at the focal plane, the two receivers are illuminated out of phase by only corresponding ones of said foci. In this latter mode of illumination the receivers drive, respectively, the SET and RESET terminals of a bistable multivibrator to thereby generate a firing signal of the same known pulse frequency as that driving the transmitter, which firing signal is then applied to a detecting and firing circuit to energize the latter as the target transits the focal plane.

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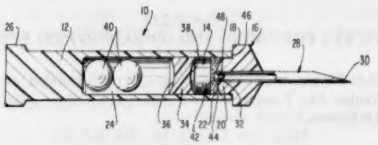
**3,837,284**

## DRY CHARGE HYPODERMIC PROJECTILE

**Robert B. Waldeisen, P.O. Hillsgrove, Barbours, Pa. 18619**

**Continuation-in-part of Ser. No. 334,546, Feb. 22, 1973, abandoned. This application Sept. 7, 1973, Ser. No. 395,095**
**Int. Cl. F42b *5/12***
**U.S. Cl. 102—92** **13 Claims**

A projectile for injecting liquid drugs into animals carries within a hollow body a drug in dry powdered form behind a water soluble wad which overlies the inner end of the hollow steel needle, whose outer end projects axially from the forward end of the projectile. The drug is liquified and the wad dissolved by injecting sterile water from a hypodermic syringe by insertion of the syringe needle into the projectile needle and piercing the wad prior to compressing the syringe plunger.



In one form, an interior member impacts a paper cap explosive charge, which upon detonation drives the syringe plunger axially to eject the liquid drug from the projectile.

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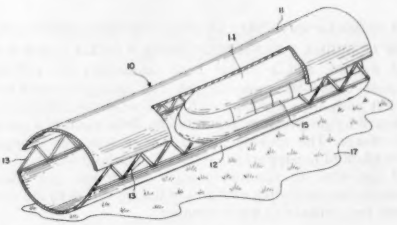
**3,837,285**

## OPEN TUBE GUIDEWAY FOR HIGH-SPEED AIR-CUSHIONED VEHICLES

**Rodney S. Goering, Columbus, Nebr., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.**

**Filed Jan. 26, 1972, Ser. No. 220,785**
**Int. Cl. B61b *13/08***
**U.S. Cl. 104—23 FS** **10 Claims**



This invention is a tubular shaped guideway for high-speed air-cushioned supported vehicles. The tubular guideway is split and separated such that the sides of the guideway are open. The upper portion of the tubular guideway is supported above the lower portion by truss-like structural members. The lower portion of the tubular guideway may be supported by the terrain over which the vehicle travels, on pedestals or some sililar structure.

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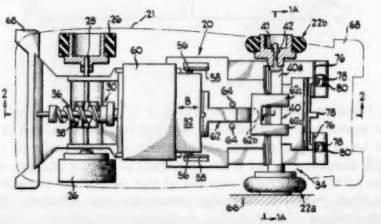
**3,837,286**

## SYSTEM FOR OPERATING MINIATURE VEHICLES

**Derek A. Brand, and Alexander Imatt, both of Camarillo, Calif., assignors to Marvin Glass & Associates, Chicago, Ill.**

**Filed Nov. 28, 1973, Ser. No. 419,521**
**Int. Cl. A63g *1/00***
**U.S. Cl. 104—60** **4 Claims**



A system for operating electrically propelled miniature vehicles along a roadbed having side-by-side current conduc-

tive lanes with substantially flush tread surfaces and for remotely controlling the vehicles in a manner to turn out and pass one another at the will of the operator as the vehicles are transferred freely from one lane to another. The roadbed has lane bordering side walls along the outer edges of the outermost lanes. A propulsion motor is mounted on the vehicle body by means providing limited fore and aft movement thereof relative to the vehicle body to effectively operate front steering wheels of the vehicle automatically in response to forward movement of the motor in response to the momentum of the vehicle when the current to the motor is suddenly cut. The motor is forced forwardly through a gear train connecting the motor to driving wheels of the vehicle due to the momentum of the vehicle when the current thereto is cut. On forward movement, the motor engages a front wheel axle assembly and pivots the assembly toward the opposite lane depending on the lateral disposition of a fulcrum portion of the front axle assembly, which positioning is determined by engagement of one of the front wheels with the adjacent lane bordering side walls.

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**3,837,287**

## MAGNETIC SUSPENSION UTILIZING AN ELONGATED COIL

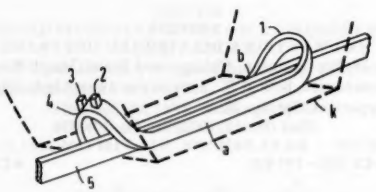
**Alfred Lichtenberg, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany**

**Continuation-in-part of Ser. No. 296,813, Oct. 12, 1972, abandoned. This application Nov. 22, 1972, Ser. No. 308,714**

**Claims priority, application Germany, Oct. 14, 1971, 2151150**

**Int. Cl. B61b** *13/08*

**U.S. Cl. 104—148 SS** **23 Claims**




An electromagnetic suspension arrangement for electromagnetically supporting a body movable along a roadway such as for an electromagnetically suspended railway or the like is disclosed. The arrangement includes at least one elongated conductor coil mounted on the body and having a mid portion and respective end portions integral with and bent away from the mid portion. The mid portion includes two mutually adjacent, longitudinally extending conductor segments. A ferromagnetic rail is mounted on the roadway and disposed between the segments for coacting with the conductor coil to develop electromagnetic forces for suspending the body relative to the rail. If required, the suspension arrangement can also include subsidiary structure to provide lateral stabilization and additional lifting force.

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**3,837,288**

## ACCUMULATIVE TROLLEY CONVEYOR

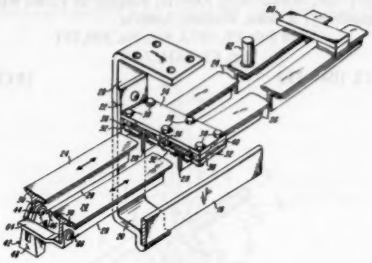
**Frank M. Cook, San Mateo, Calif., assignor to The Cincinnati Butchers' Supply Company, Cincinnati, Ohio**

**Filed Oct. 24, 1973, Ser. No. 409,043**

**Int. Cl. B61b** *13/12*

**U.S. Cl. 104—162** **24 Claims**

The accumulative trolley conveyor operates to advance and space along a trolley rail a multiplicity of load-suspending trolleys, with emphasis on accuracy of spacing and maintaining complete control over all trolleys of a group, so that none may escape control and become a deterrent to the orderly and accurate disposition of trolleys along the accumulative rail.



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**3,837,289**

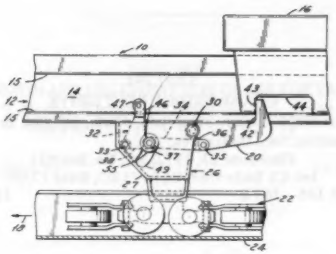
## CONVEYOR

**Edward F. Marshman, South Lyon, and Bruno D. Warmann, Livonia, both of Mich., assignors to Jervis B. Webb Company, Detroit, Mich.**

**Filed Jan. 23, 1973, Ser. No. 326,045**

**Int. Cl. B65g** *17/42*

**U.S. Cl. 104—172 B** **23 Claims**



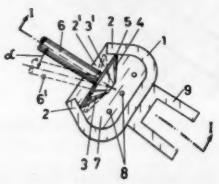

A conveyor for forwarding carriers along a support, the carriers being engaged by pusher members attached to an endless driven chain supported on a track adjacent to the carrier support. Each pusher member is pivotally mounted and is associated with a pivoted control member located forwardly of the pusher member and connected thereto by a link, the two members being normally urged to positions in which the pusher member is drivingly engageable with a carrier and the control member is engageable with an object such as a preceding carrier overtaken by the control member, such engagement resulting in movement of the pusher member to a non-driving position and enabling carriers to be stopped and accumulated. A cam follower secured to the control member is selectively engageable with movable cam tracks. One type of cam track is arranged to produce movement of the pusher member to non-driving position when engaged by the cam follower and is combined with an abutment for stopping the carrier being driven by the pusher member. A second type of cam track, when engaged by the cam follower, causes the control member to be converted into an auxiliary pusher by preventing pivotal movement of the control member in response to engagement with a carrier.

3,837,290

## DEVICE FOR CONNECTING A SPORTING DEVICE, TRANSPORT DEVICE OR THE LIKE TO THE TOWROPE OF A TOW LIFT

Herbert Dur, Schwarzach, Austria, assignor to Firma Konrad Doppelmayr & Sohn, Wolfurt, Austria

Filed July 19, 1973, Ser. No. 380,731
Int. Cl. B61b 7/20
U.S. Cl. 104—193 18 Claims



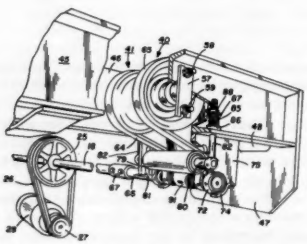
The invention relates to a device for connecting a sporting device, a transport device or the like to the towrope of a tow lift. The free end of the towrope is connected with a suspension piece and a receiving piece is arranged on the transport device, sporting device or the like. The receiving piece has a slot of a smaller breadth than the suspension piece, whereby the suspension piece, in the towing position, abuts the receiving piece behind said slot.

3,837,291

## CRANE BRIDGE BELT DRIVE

Max Frederick Umlor, Muskegon, Mich., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 21, 1972, Ser. No. 265,031
Int. Cl. B61c 9/48; B61d 15/02; B66c 17/00
U.S. Cl. 105—163 R 11 Claims



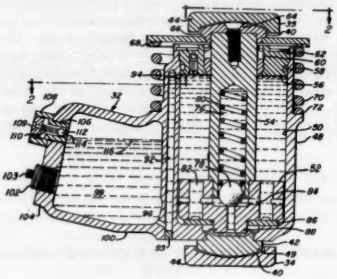
Belt drive apparatus for the bridge of an overhead traveling crane. Multi-V belts are driven by a grooved drive sheave coupled to the main drive shaft. The plurality of apices formed by the multi-V-belt engages a grooveless sheave coaxially secured to a crane drive wheel effecting torque transmission by an axially floating drive relation therebetween. The wheels, in turn, ride on a runway beam defining a track over which bridge travel is to be effected.

3,837,292

## HYDRAULIC TRUCK SNUBBER

Donald Wiebe, R.D. No. 3, Sewickley, Pa. 15143

Continuation-in-part of Ser. No. 857,274, Aug. 22, 1969, Pat. No. 3,595,350, which is a continuation-in-part of Ser. No. 709,142, Feb. 28, 1968, abandoned. This application Apr. 15, 1971, Ser. No. 134,126
Int. Cl. B61f 5/12; F16f 9/06, 9/32
U.S. Cl. 105—197 DH 10 Claims



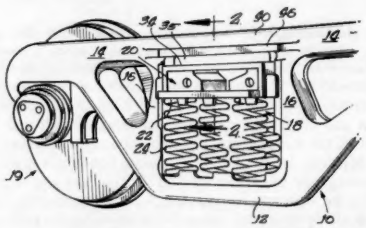
A hydraulic snubber device for railroad car trucks to be interposed between a bolster end and side frame member. This device being of minimum height for a given useful stroke because ullage volume is provided in a reservoir outside the snubber cylinder.

3,837,293

## RAILWAY TRUCK BOLSTER AND SIDE FRAME

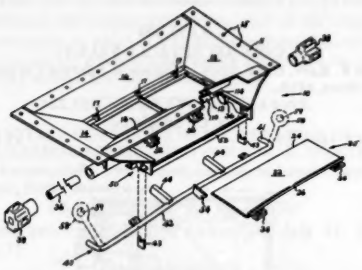
Otto Walter Neumann, Chicago, and Frank Joseph Korpics, Streamwood, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Oct. 12, 1972, Ser. No. 296,876
Int. Cl. B61f 5/06, 5/12; F16f 1/06
U.S. Cl. 105—197 DB 4 Claims



A railway truck wherein a bolster is supported in the windows by a pair of side frames and said bolster has a U-shaped stiffening member raised above the bolster top wall on each end thereof, said member extending from side to side intermediate friction shoe pockets defined by said bolster. The compresssion member of said side frame defines a downwardly opening U-shaped channel capable of receiving therein said U-shaped stiffening member of the bolster in a telescoping relationship. The arrangement provides for greater length of both the control spring columns and load spring columns.

**3,837,294**
**CAMMED RAILWAY HOPPER GATE LATCHING APPARATUS**
**Wallace L. Fossett, Weldon Spring Heights, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.**
**Filed Dec. 4, 1972, Ser. No. 311,881**
**Int. Cl. B61d** *7/20, 7/26, 49/00*
**U.S. Cl. 105—253** **22 Claims**



A rotatable shaft is mounted along an end of a gravity outlet having locking means mounted thereon for engaging the end portion of the gate to hold the same in closed position. Also mounted on the shaft is at least one locking cam. Upon rotation of the shaft to move the locking means into engagement with the gate, a locking cam engages the surface of a rigid member, deflecting the shaft and then locking the cam in place to hold the locking means in engagement with the gate. When the shaft is rotated in the opposite direction the shaft is again deflected, the cam disengages from the rigid member and the locking means disengages from the gate so that the same can be opened.

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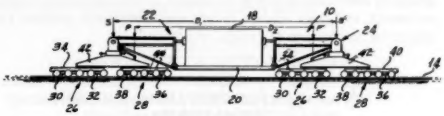
**3,837,295**
**REDUCED PIVOT CENTER DISTANCE ASSEMBLY FOR A RAILWAY CAR**
**Franco Fedele, Florence, Italy, assignor to Norca Machinery Corporation, New York, N.Y.**
**Filed Dec. 29, 1971, Ser. No. 213,480**
**Int. Cl. B61d** *3/16*
**U.S. Cl. 105—367** **16 Claims**



A reduced pivot center distance system for a railway car in which each end of the load is supported on a bolster carried by the running gear by means of an arcuate sliding connection comprising an arcuate way and an arcuate slide disposed in the way and connected to the load so as to constrain the load to swing about a pivot point which is the center of the arc of movement of the sliding connection. Preferably the arcuate sliding connection is supported on the bolster for lateral sliding movement to permit lateral shifting of the entire load if necessary.

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**3,837,296**
**SAFETY LATCH PIN FOR BULKHEADS**
**Russell M. Loomis, Palos Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.**
**Filed Apr. 5, 1972, Ser. No. 241,311**
**Int. Cl. B60p** *7/14*
**U.S. Cl. 105—376** **4 Claims**

A safety latching and anti-ratcheting system for releasably securing lading cushioning systems which include a movable bulkhead, against lading stacked in a railway car or the like, where one side of said bulkhead normally receives the forces of the lading shifting within the car as said lading is being shipped. The latching system includes a plurality of retractable members mounted at the corners of said bulkhead, which members have integral latch pins at the ends thereof which engage latch strips mounted within said car. The latch pins are provided with a safety anti-ratcheting shape where the side of the pin toward the force-receiving side of the bulkhead is tapered and the side of the pin away from the force-receiving side is straight. Moreover, the terminal portions of said pins are shaped and adapted to readily extend into the latch pin receiving apertures or recesses in said latch strips.

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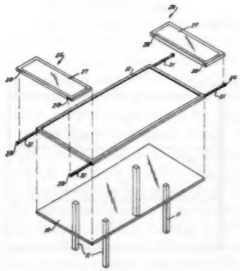
**3,837,297**
**EXTENSION ARRANGEMENT FOR GLASS TOP TABLES**
**Herbert E. Kaplan, 6 Pickett Ct., Malverne, N.Y. 11535**
**Filed May 10, 1973, Ser. No. 359,172**
**Int. Cl. A47b** *1/04*
**U.S. Cl. 108—69** **10 Claims**



A frame independent of a table is adapted to be rested upon and surround the glass top of the table. An extension leaf is provided, as well as means for securing the leaf to an edge of the frame. The securing means may be rods carried by the frame and movable between extended and retracted positions. Alternatively, the securing means may be headed studs carried by one of the frame or extension leaf, and a cooperating hole formed in the other.

## 3,837,298
## LEVELLING ASSEMBLY FOR WARPABLE PLAYING SURFACES

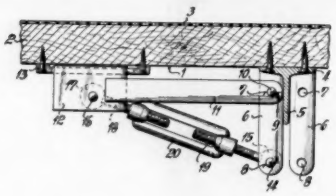
**Xaver Leonhart, 8381 Harburg b., near Pilsting, Lower Bavaria, Germany**

**Filed July 23, 1973, Ser. No. 381,566**

**Claims priority, application Germany, July 24, 1972, 2236284**

**Int. Cl. A47b** *25/00*

**U.S. Cl. 108—161** **10 Claims**



A rigid T-shaped rail connected along the longitudinal center axis on the bottom of a playing surface panel has pairs of depending lugs on opposite sides and at opposite ends thereof. Bracket members are connected to the under surface of the panel laterally outwardly from the lugs on the rail, which brackets provide a vertically narrow lost-motion slot adjacent the bottom surface of the panel. An adjustable triangle mechanism is connected between the depending lugs and a slide member in the vertically narrow lost-motion slot wherein the hypotenuse of the triangle mechanism is constructed of a tensioning device that can be lengthened or shortened, such as a turn buckle, causing upward and downward forces to be transferred between the areas of the playing surface panel to which the rail and brackets are connected to render the panel planar and at the same time not rigidly connect these panel areas to each other, allowing for normal expansion and contraction laterally in the playing surface area without causing further warpage thereof.

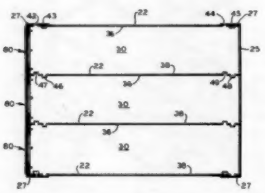
## 3,837,299
## MODULAR SAFE DEPOSIT BOX ASSEMBLY

**Ralph E. McClellan, Toledo, Ohio, assignor to Meilink Steel Safe Company, Toledo, Ohio**

**Filed Jan. 22, 1973, Ser. No. 325,315**

**Int. Cl. E05g** *1/00*

**U.S. Cl. 109—56** **9 Claims**



A modular metal cabinet structure having a plurality of individual compartments which are vertically stacked and horizontally sequenced. These compartments are defined by horizontal plate shelves and vertical partitions together with outer side and back wall plates and have frontal openings closed by hollow hinged doors carrying locks on their internal faces. The horizontal shelves are provided with a plurality of pairs of elongated slots which are aligned with alternate and complementary tongues and notches along the top and bottom edges of the adjacent vertical partitions, to form an easily erectable framework. Each door and hinge assembly cooperates with jambs or stops affixed to the inner surfaces of each vertical partition adjacent the frontal opening of its compartment to safeguard forcing-in or prying-out the door when it is in its closed and locked position. Furthermore the pivot pins of each door hinge are in blind holes, the open ends of which holes are at least partially concealed by adjacent structures.

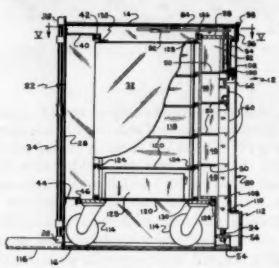
## 3,837,300
## COIN RECEPTACLE VAULT

**Willis F. Karr, Utica, Mich., assignor to Sparton Corporation, Jackson, Mich.**

**Filed Apr. 23, 1973, Ser. No. 353,224**

**Int. Cl. E05g** *1/00*

**U.S. Cl. 109—57** **15 Claims**



A vault particularly suitable for use in trucks employed to collect coins, such as from coin telephones and vending machines, the vault comprising a housing having a rear door wherein a wheeled cart may be readily placed within, and removed from the vault. The wheeled cart includes a plurality of coin box receptacle compartments arranged in rows, and the front side of the vault housing includes a plurality of rows of doors wherein the doors are sequentially linearly movable to align with and enclose a compartment, the displacement of a door providing access to an adjacent compartment, and the sequential door operation is repeated until all of the compartments in a row are filled and closed. Door latching means properly orient the doors with respect to their associated compartment, and door release means simultaneously releases the doors for resetting to the initial condition.

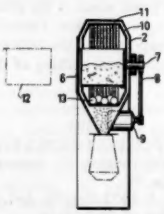
## 3,837,301
## APPARATUS FOR PREPARING ASHES IN CREMATORIES

**Kjell Falling, Alvsjo, Sweden, assignor to Tabo Industriugnar AB, Stockholm, Sweden**

**Filed July 10, 1973, Ser. No. 378,024**

**Int. Cl. F23g** *1/00*

**U.S. Cl. 110—3** **5 Claims**



Apparatus for preparing ashes in a crematory includes a casing to the lower end of which can be fastened an urn for

receiving the ashes after they are ground in a rotatable drum located within the casing.

An ashpan from the crematory oven containing the ashes is inserted into the interior of the drum by way of a door on the casing, and when the drum rotates, the ashpan is turned upside down thus spilling the ashes into a perforated shell located within the drum and containing rolling bodies for grinding. The ground ashs pass downwardly and outwardly through the perforated shell and thence into the attached urn. In another embodiment, the ashpan itself forms part of the rotatable drum structure to which is attached a perforated cover, the rolling bodies for grinding being placed inside the ashpan before being inserted into the enclosing casing.

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**3,837,302**

**INSTALLATION FOR THE INCINERATION OF HOUSEHOLD REFUSE AND INDUSTRIAL WASTE**

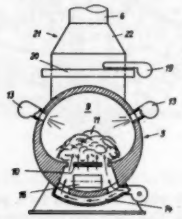
**Henri Bersier, Bulle, Switzerland, assignor to Societe Anonyme Surtec, Bulle, Switzerland**

**Filed July 5, 1973, Ser. No. 376,713**

**Claims priority, application Switzerland, July 11, 1972, 10388/72**

**Int. Cl. F23g** *5/12*

**U.S. Cl. 110—8 C** **1 Claim**



An installation for the incineration of household refuse and industrial waste includes a chamber for the combustion of refuse and waste, this combustion chamber communicating with a chimney for the evacuation of burnt gases via a post-combustion chamber. Both the combustion and post-combustion chambers have inlets for air and for a liquid or gaseous fuel, and a thermostat for maintaining the temperature of combustion in the respective chambers at 800° C.

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**3,837,303**

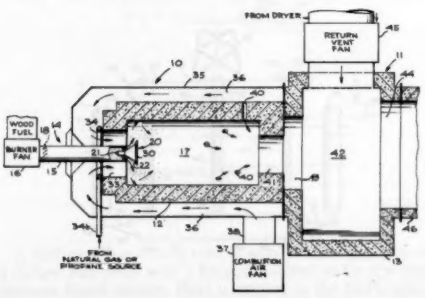
**WOOD AND GAS FUEL BURNER**

**Andrew B. Baardson, Beaverton, Oreg., assignor to Mill Conversion Contractors, Inc., Hillsboro, Oreg.**

**Filed Nov. 9, 1973, Ser. No. 414,508**

**Int. Cl. F23g** *7/00*

**U.S. Cl. 110—8 A** **9 Claims**




The present invention provides a burner by means of which waste wood and the fumes emitted by drying wood can effectively be burned to not only provide additional heat energy but also to reduce atmospheric pollution. The burner basically comprises two chambers. The wood, fed in powdery form, is burned in the first chamber, the product of this combustion being passed to the second chamber where it is mixed with the fumes before being combusted a second time. A number of innovations makes this burner highly effective and useful in the lumber mill industry.

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**3,837,304**

**DEEP IMPLANTATION OF A VOLATILE FUNGICIDE**

**William J. Carroll, Costa Mesa, Calif., assignor to Great Lakes Chemical Corporation, West Lafayette, Ind.**

**Continuation-in-part of Ser. No. 33,867, May 1, 1970, abandoned. This application Oct. 20, 1971, Ser. No. 190,825**

**Int. Cl. A01c** *23/02*

**U.S. Cl. 111—6** **5 Claims**

Method of controlling soil fungi by the deep implantation of a volatile fungicide to a closed chamber at least 3 feet in depth.

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**3,837,305**

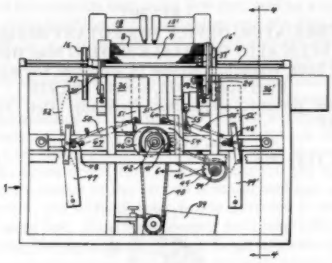
**DUAL HEAD BORDER PANEL MANUFACTURING MACHINE**

**David R. Cash, Louisville, Ky., assignor to James Cash Machine Co., Louisville, Ky.**

**Filed Aug. 17, 1973, Ser. No. 389,261**

**Int. Cl. D05b** *11/00*

**U.S. Cl. 112—3** **6 Claims**



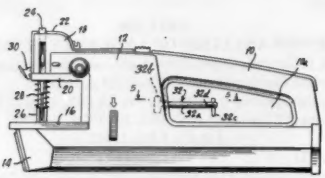
A border panel manufacturing machine having 1st and 2nd sewing heads mounted for contemporaneous transverse right and left movement over cross traverses, each of which is horizontally planar, straight and relatively adjustable in size. In one case, the 1st head sews along a conventional square cut zigzag path extending completely across a 1st strip-like border panel component assembly of full width while the 2nd head sews along a similar square cut path extending completely across a 2nd completely separate border component panel assembly, the full width of which is the same as or different from the full width of the 1st panel assembly. In another case, both heads sew along similar square cut zigzag paths respectively extending completely across the width of separate "left" and "right" halves of one border panel component assembly while both heads cooperate with each other to sew, to said separate left and right halves, the left and right borders or flanges of a zipper strip arranged between them. This procedure integrates said panel assemblies into one single border panel having a centrally disposed zipper. Naturally, either head of the machine can also be used to sew a single border panel assembly while the other head remains idle.

Provision is also made: to clamp the work or unclamp it contemporaneously on both front and rear sides of the sewing zone and to clamp it only on the front side when desired; and to adjust the size and the position of each sewing head reciprocation independently of the other.

## 3,837,306
## PORTABLE LIGHTWEIGHT HAND-HELD SEWING MACHINE

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Continuation-in-part of Ser. No. 286,719, Sept. 6, 1972, abandoned. This application Mar. 26, 1973, Ser. No. 344,608
Int. Cl. D05b *1/00, 27/02*
U.S. Cl. 112—169 8 Claims

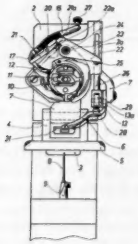


A portable, lightweight, hand-held, chainstitching sewing machine having: a reliable and inexpensive device for raising and locking the presser foot carrier rod; a pivoted spool spindle moveable between a storage position in which it is nearly flush with a side wall of the sewing machine housing and a working position in which it extends perpendicularly away from that wall; a uniquely shaped feed dog cooperating with the needle and with the hook to facilitate loop forming; a uniquely shaped hook providing reliable loop forming; and a needle support biased to a position facilitating loop forming.

## 3,837,307
## LUBRICATING DEVICE FOR ROTARY HOOKS IN CYCLICALLY OPERABLE SEWING MACHINES

Gunter Tolle, Wendelinusstrasse 15, Bruchsal, Germany

Filed Oct. 3, 1973, Ser. No. 402,972
Claims priority, application Germany, Oct. 12, 1973, 2250015
Int. Cl. D05b *71/02*
U.S. Cl. 112—256 8 Claims

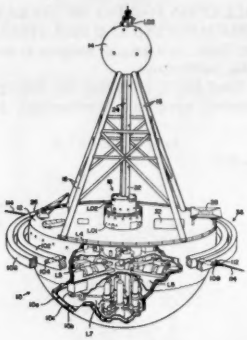


A lubricating device for lubricating the raceway of a double stitch rotary hook particularly in stitch group sewing machines comprising a rotating rotary hook which is mounted either in an arm which is pivoted above the work support in which there is a needle arranged below the support or where the rotary hook is mounted below the support and the needle is above the support. The arrangement includes a lubricating conduit leading out of a lubricating tank and containing a filler of capillary material for conducting the lubricant through the material to the other end of the conduit. The conduit is mounted on the sewing machine housing so as to be movable toward and away from the double stitch rotary hook. The sewing machine includes means for mounting the conduit so that it is moved into a position in which the filler of capillary material comes into contact with the raceway of the double stitch rotary hook when the machine is in a non operative or still position but it moves to a position spaced from the rotary hook raceway when the machine is operating and the shuttle is rotating.

## 3,837,308
## FLOATING POWER PLANT

Douglas G. Harvey, Nashua, N.H., and John F. Holmes, Andover, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed May 24, 1971, Ser. No. 146,393
Int. Cl. B63b *35/02*
U.S. Cl. 114—.5 R 13 Claims

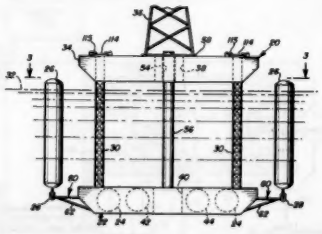


A floating power plant is housed in a generally spherical double-walled shell. The shell and its contents form part of a compound pendulum whose center of mass is located below the metacenter of the sphere and which has a natural frequency substantially below that of the prevailing wave frequency of the water. Consequently, the power plant is supported upright in the water and does not rock in response to the wave motion of the water.

## 3,837,309
## STABLY BUOYED FLOATING OFFSHORE DEVICE

Frank N. Biewer, San Diego, Calif., assignor to Offshore Technology Corporation, Escondido, Calif.

Continuation-in-part of Ser. No. 153,959, June 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 839,223, July 7, 1969, abandoned. This application Feb. 22, 1972, Ser. No. 228,278
Int. Cl. B63b *35/44*
U.S. Cl. 114—.5 D 5 Claims



A floating offshore device including a closed vessel, such as a water tight hull, which is adapted to be ballasted to a submerged stage; and when submerged, it is retained in position

by buoying means that can sway relative to the hull. The vessel is provided with a plurality of tanks and compartments, at least, one of the tanks receiving ballast and other compartments receiving some of the materials necessary for carrying out work to be performed. Upright means is fastened to the vessel and extends above the water. This upright means, in the form of structural columns, supports a floatable platform above the water when the device is in operable working position, the platform carrying some of the machinery for carrying out the work to be performed. The platform rests on the vessel when the device is being moved.

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**3,837,310**

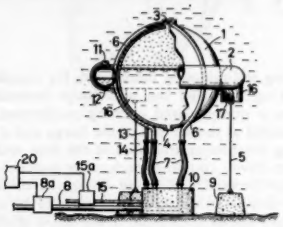
**UNDERWATER OIL STORAGE**

**Yoshio Toyama, Kanagawa, Japan, assignor to Mitsui Shipbuidling and Engineering Co., Ltd., Tokyo, Japan**

**Filed Sept. 8, 1972, Ser. No. 287,222**

**Int. Cl. B63b** *35/00*

**U.S. Cl. 114—.5 T** **1 Claim**



An underwater oil storage apparatus having an oil storage tank moored to the sea bottom and a buoyancy adjusting tank secured to the oil storage tank, characterized by producing a substantially constant small buoyancy for a whole oil storage equipment by introducing or draining water in the buoyancy adjusting tank according to the amount of stored oil.

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**3,837,311**

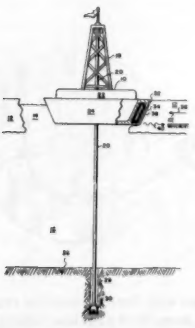
**APPARATUS FOR MELTING ICE**

**James F. Lea, Jr., Richardson, Tex., assignor to Sun Oil Company, Dallas, Tex.**

**Filed Oct. 5, 1972, Ser. No. 295,312**

**Int. Cl. B63b** *35/00, 35/08*

**U.S. Cl. 114—.5 D** **11 Claims**



A surface effect drilling vehicle with ice melt apparatus has a hollow hull lined with a fibrous material and a low vapor pressure liquid therein. Heat is applied to the hull's interior wall which vaporizes the liquid causing the liquid to transfer by diffusion to the exterior wall of the hull where it loses its heat to the ice and condenses. By the capillary action of the fibrous material the condensed liquid returns to the heated hull interior wall where the process is repeated.

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**3,837,312**

**HYDRAULIC CONTROL MECHANISM FOR HOPPER BARGES**

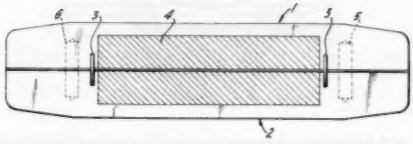
**Georg Onderka, Metten, Germany, assignor to Deggendorfer Werft und Eisenbau G.m.b.H., Deggendorf/Donau, Germany**

**Filed Aug. 29, 1973, Ser. No. 392,448**

**Claims priority, application Germany, Aug. 31, 1972, 2242921**

**Int. Cl. B63b** *35/30*

**U.S. Cl. 114—29** **4 Claims**



A hopper barge consists of two barge halves articulated to each other along a longitudinal axis of the barge. First and second cylinder-piston actuators are mounted in respective opposite ends of the barge and connected between the two barge halves. Respective first and second pressure fluid tanks are located adjacent each actuator. A pressure fluid pump is connected by a suction line to the first tank and by a pressure line to a three-position switching valve, and the first tank is connected by a return line to the three-position switching valve. The valve is selectively operable to connect these lines alternately to respective opposite ends of the cylinder of the first actuator. The second pressure fluid tank is connected to the second actuator by a suction line, and an interconnection line extends between the first and second tanks. A common pressure line interconnects corresponding ends of the cylinders at the actuators. A flow line interconnects the opposite ends of the cylinder of the second actuator and has a check valve therein, and a check valve is also provided in the common pressure line. The three-position switching valve has a first position, for opening the hopper barge when the latter is loaded, a second position, for closing an empty hopper barge, and a third position for opening the hopper barge when the latter is empty.

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**3,837,313**

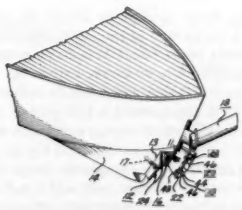
**HYDROFOIL BOW DOOR**

**John W. Williams, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.**

**Filed June 25, 1973, Ser. No. 373,549**

**Int. Cl. B63b** *1/06, 1/30*

**U.S. Cl. 114—66.5 H** **4 Claims**



The present invention discloses the method of providing greater structural strength and resistance to fluid leakage in

the closure junction of bow or stern doors of a marine, air, or surface vessel by locating the closure junction away from the longitudinal axis of the vessel.

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**3,837,314**

## FLUID CUSHION SUPPORTED VEHICLES

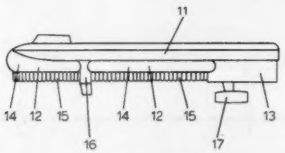
**Peter Rowland Crewe, Newport, England, assignor to British Hovercraft Corporation, Yeovil, England**

**Filed Feb. 7, 1973, Ser. No. 330,415**

**Claims priority, application Great Britain, Feb. 14, 1972, 6688/72**

**Int. Cl. B63b *1/34***

**U.S. Cl. 114—67 A** **7 Claims**




A fluid cushion supported vehicle is provided with control surfaces for improving the directional stability and control of the vehicle. The control surfaces, which are provided on either side of the longitudinal center line of the vehicle and forward of the lateral center line of the vehicle, may also act as support structure for the flexible skirt assembly.

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**3,837,315**

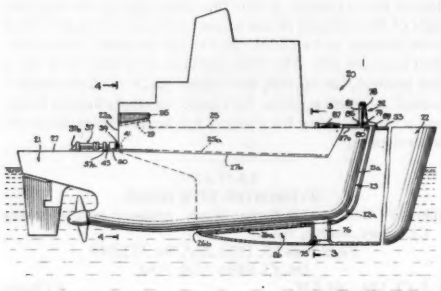
## TUG-BARGE SYSTEM AND METHOD

**Robert P. Giblon, Shrewsbury, N.J., assignor to George G. Sharp, Inc., New York, N.Y.**

**Filed June 8, 1973, Ser. No. 368,299**

**Int. Cl. B63b *21/00***

**U.S. Cl. 114—235 R** **23 Claims**



Integrated tug barge system in which the tug is rigidly secured within a barge well at the stern end of the barge by holding and locking the tug deck at both sides against the undersides of respective longitudinally extending, overhanging portions of respective barge wings which define the sides of the barge well. Firm engagement is by a pair of wedge blocks at either side of the tug which engage wedges on the respective stern ends of the barge wings to thus hold tug up at its stern; a tug bow locking device which engages the barge deck and supports tug at forward end of barge well; and a pair of tensioning devices attached on tug deck respectively adjacent barge wing stern ends and which carry standard railroad car couplers connected to similar couplers on barge wing stern ends to hold tug in longitudinal direction within barge well. The tensioning devices are hydraulic rams which also serve to draw tug into barge well when connecting tug and barge, and to quickly push tug out of barge well during disengagement. See specification for further features of connection means and method.

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**3,837,316**

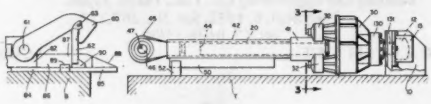
## TUG/BARGE LATCHING MECHANISM

**Andrew Stratienko, Wyndmoor; Robert J. Kornsey, Hatfield, and Joseph L. Paulhamus, Bridgeport, all of Pa., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.**

**Filed Sept. 10, 1973, Ser. No. 395,744**

**Int. Cl. B63b *21/62***

**U.S. Cl. 114—235 A** **23 Claims**



A self-latching self-releasing mechanism for coupling and releasably locking a marine tug to a barge includes, in a preferred form, a non-powered latching mechanism of the hook type mounted at the aft end of the barge and a power-driven coupling mechanism mounted at the fore end of the tug. The power-driven coupling mechanism includes an eye mounted at the forward end of an elongated tubular nut adapted to be driven forwardly and rearwardly by a power drive screw shaft. The rearward end of the screw shaft is supported for rotation in the housing of the power drive. The power-drive housing is supported on a stub shaft mounted for universal movement in a support housing mounted on the tug. Translational thrust forces are transmitted through the screw shaft and its power-drive housing to the support housing. Self-latching and self-releasing of the latching mechanism is controlled by the direction of the axial movement of the tubular nut on the screw shaft.

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**3,837,317**

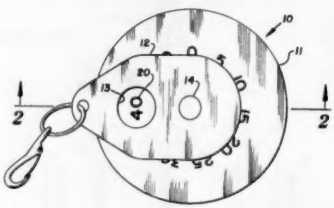
## YARD MARKER FOR FOOTBALL COMPETITION

**Burton C. Hanauer, Avon, Minn., assignor to Hanauer Machine Works Incorported, Avon, Minn.**

**Filed Aug. 20, 1973, Ser. No. 390,093**

**Int. Cl. G09f *9/00***

**U.S. Cl. 116—133** **3 Claims**



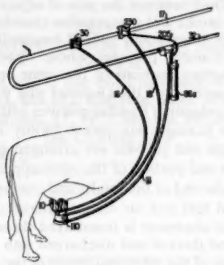

A marker for use with football sideline chains comprising a base plate having numerical yard line indicia printed thereon, the base plate having a viewing plate arranged in superimposed disposition over the base plate with a yard line indicia viewing bore formed in the viewing plate to conceal all but a pre-selected yard line indicia from view. A clip means is secured to the viewing plate for attachment of the marker means to the football sideline chain.

3,837,318

## AUTOMATIC MILKER RELEASE

Lloyd P. Duncan, and J. Nathan Oberg, both of Washington, Mo., assignors to Zero Manufacturing Company, Washington, Mo.

Continuation-in-part of Ser. No. 80,028, Oct. 12, 1970, abandoned. This application Aug. 7, 1972, Ser. No. 278,356
Int. Cl. A01j 5/14
U.S. Cl. 119—14.08 12 Claims



A milker with a claw, receiver and teat cups connected to a pulsator has a valve in a vacuum line leading from the receiver to a milk collector line. The valve is associated with the milker so that when milk stops flowing from the receiver, ambient pressure is admitted to the interior of the receiver. The teat cups are then released from the animal and at the same time, the collector line is valved shut to preserve its vacuum. In addition to a valve that admits atmospheric pressure in the receiver, an electric light can be used. With each device, an operator can see that the flow of milk to the collector line has stopped.

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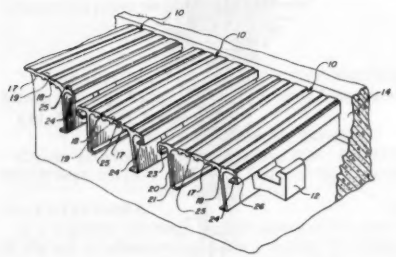
3,837,319

## SLATTED FLOOR SYSTEM

Russell B. Lehe, 400 Ascot Dr., Park Ridge, Ill. 60068

Filed Sept. 5, 1972, Ser. No. 286,013
Int. Cl. A01k 1/00
U.S. Cl. 119—28 1 Claim



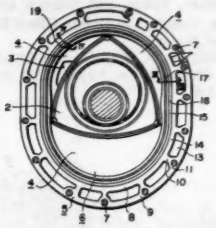
A lightweight, easily - assembled slatted flooring system for an animal enclosure comprises a plurality of U-shaped main channels interconnected in spaced-parallel relationship by U-shaped connectors, each connector having shaped ends extending from two legs which engage similarly shaped outer channels at the upper, outer corners of each main channel.

3,837,320

## CASING FOR USE IN A ROTARY PISTON ENGINE

Kazuo Maekawa, Hiroshima, Japan, assignor to Toyo Kogyo Company Limited, Hiroshima, Japan

Filed Apr. 30, 1973, Ser. No. 355,377
Claims priority, application Japan, Apr. 29, 1972, 47-43082
Int. Cl. F02b 53/00
U.S. Cl. 123—8.01 10 Claims



A casing for use in a rotary piston engine provided with a water cooling jacket therein, said casing consisting essentially of a pair of side housings and a rotor housing assembled therebetween, with a sealing member fitted in a first groove which extends in an annular or a circular form along and in parallel with the trochoidal inner peripheral wall of said rotor housing, said first groove being provided in the mating surface of said rotor housing, said casing reaturing a second groove disposed in either or both of said rotor housing and side housing at the mating surface between said first groove and said trochoidal inner peripheral wall and approximately parallel to said trochoidal inner peripheral wall and having a branched passage in communication with the suction space or suction working chamber of said engine on its intake stroke. With this arrangement, the ingress of a hot gas through a gap, if any, between said mating surfaces may be prevented, thus protecting said sealing member from the thermal attack due to said hot gas.

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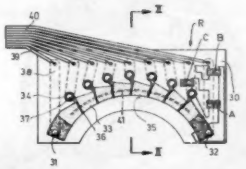
3,837,321

## MEANS FOR INDICATING THE RATE OF AIR FLOW IN THE INTAKE MANIFOLD OF AN INTERNAL COMBUSTION ENGINE

Rudolf Sauer, Bernhausen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 3, 1973, Ser. No. 403,169
Claims priority, application Germany, Oct. 7, 1972, 2249279
Int. Cl. F02m 51/00
U.S. Cl. 123—32 EA 10 Claims



A potentiometer wherein the sliding contact is pivotable by the flap of an air flow rate metering gauge in the intake manifold of an internal combustion engine with fuel injection into the manifold, and the stationary resistor track of the potentiometer is provided with spaced-apart metallic strips

each of which is connected with at least one resistor. The strips are thin enough to be cut by the sliding contact and each thereof extends from a discrete fixed contact adjacent to a convex edge face of the track all the way to a concave edge face of the track. The potentiometer is connected with a control circuit which determines the duration of pulses serving to effect an opening of fuel injection valves.

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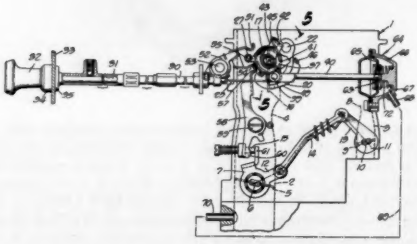
**3,837,322**
**CARBURETOR CHOKE**

**Toshimasa Shishido, Tokyo, and Minoru Atsumi, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan**

**Filed July 30, 1973, Ser. No. 383,785**
**Int. Cl. F02b** *3/00*; **F02m** *13/04*, *23/04*
**U.S. Cl. 123—75 B** **8 Claims**



A carburetor assembly has a primary passage to supply a lean mixture to main combustion chambers of an engine, and has an auxiliary passage to supply a rich mixture to auxiliary combustion chambers of the engine. A throttle valve in each passage is provided with a shaft, and linkage connects the two shafts for coordinated motion. A choke valve in the primary passage is connected to the primary throttle valve so that positioning of both the primary throttle valve and the auxiliary throttle valve are affected when the choke valve is in operation. Structure is provided to limit opening movement of the choke valve to different extents, depending on the ambient temperature at the time of starting the engine.

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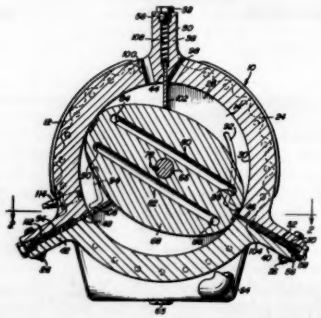
**3,837,323**
**ROTARY ENGINE**

**Frank Delfino, and Robert E. Pool, both of 1101 Castro Ln., Bakersfield, Calif. 93304**

**Filed Mar. 2, 1973, Ser. No. 337,304**
**Int. Cl. F02b** *53/00*
**U.S. Cl. 123—8.33** **8 Claims**



A rotor casing is provided defining a generally cylindrical rotor chamber including opposite side walls and a generaly cylindrical peripheral wall extending therebetween. A rotor of elliptical cross-sectional shape is journaled in the chamber about an axis centrally disposed relative to the chamber and the rotor with the major diameter ends of the rotor sweeping the peripheral wall of the chamber. The casing includes three generally equally circumferentially spaced radial abutments supported for extension and retraction relative to the peripheral wall of the chamber into and out of the outer periphery of the chamber and the inner ends of the abutments are slidingly engaged with the outer periphery of the rotor. Between two adjacent abutments is defined an intake and compression chamber and a combined power and exhaust chamber is defined between the pair of adjacent abutments in advance of the intake and compression chamber. The rotor includes a pair of transversely spaced longitudinally extending opposite side transfer passages whose opposite ends open through end surface portions of the rotor opposing the side walls of the chamber and the chamber side walls include circumferentially extending transfer grooves with which the ends of the transfer passages are intermittently registrable. The transfer passages and grooves are arranged such that as one major diameter end portion of the rotor approaches the abutment defining the end of the intake and compression chamber the compressed fuel and air mixture ahead of the rotor end and behind that abutment is transferred through the rotor to the opposite end thereof and discharged into the area behind the opposite end of the rotor and ahead of the abutment defining the beginning of the power and exhaust chamber. Thereafter, combustion is initiated behind the rotor end in the power and exhaust chamber imparting rotation to the rotor, the exhaust gases ahead of the end of the rotor in the power and exhaust chamber being expressed from an exhaust port disposed closely behind the abutment defining the end of the power and exhaust chamber. The cycles of intake, compression, power and exhaust are repeated twice during each revolution of the rotor.

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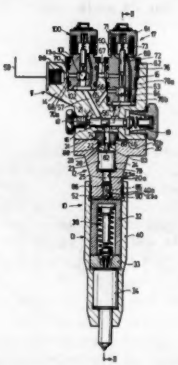
**3,837,324**
**FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES**

**Heinz Links, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Mar. 13, 1973, Ser. No. 340,713**
**Claims priority, application Germany, Mar. 22, 1972, 2213776**
**Int. Cl. F02m** *51/00*
**U.S. Cl. 123—139 E** **8 Claims**



An improvement in a fuel injection system for internal combustion engines and particularly for diesel engines is described wherein a pump-and-nozzle assembly comprising a top part, a pump part and an injection nozzle part is provided for each of

the cylinders in the engine comprises a 3:2-path solenoid valve being disposed near a slide valve controlling the pump part of the assembly and establishing communication between a pressure source and the said valve slide, a pre-set nozzle member influencing the velocity of the intake stroke of a pump piston in the pump part of the assembly, and a 2:2-path solenoid valve interposed in a fuel return line and comprising adjusting means for comprising the opening periods thereof and thereby determining the duration and length of the intake stroke of the pump piston and together therewith the amount of fuel deliverable from the pump part to the nozzle part of the assembly in the interval between two fuel injections.

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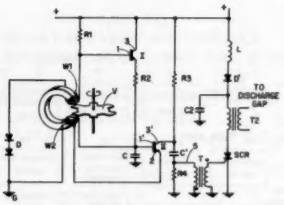
**3,837,325**
**PULSE GENERATOR FOR ENERGY DISCHARGE SYSTEM**

**Floyd M. Minks, Rt. 1, Box 66, Kissimmee, Fla. 32741, and Floyd A. Minks, Box 252, Ridgetop, Tenn. 37152**

**Filed Sept. 17, 1971, Ser. No. 181,445**
**Int. Cl. F02p** *3/02*
**U.S. Cl. 123—148 E** **9 Claims**




This disclosure relates to a pulse generator for triggering successive energy discharges, such as in automotive and other ignition systems and the like, which generator basically comprises a magnet core carrying coil windings on two portions immediately adjacent opposite sides of an air gap, the air gap being interrupted periodically by a conductive slotted vane to alter the coupling between these coil windings. The windings are interconnected with a network containing amplifying means, preferably a pair of transistors, to produce a single output pulse each time the conductive portion of the vane leaves the gap between the windings, the circuit being particularly adapted to work with physically small parts over a wide range of component values, supply voltages and temperatures, and giving accurate angular resolution which is insensitive to the values of the active electronic components.

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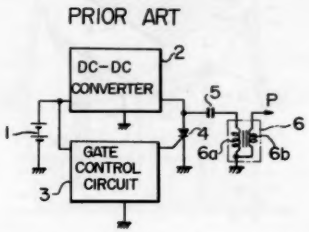
**3,837,326**
**CAPACITOR DISCHARGE IGNITION SYSTEM**

**Mamoru Kamiji, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Japan**

**Filed Sept. 15, 1972, Ser. No. 289,612**
**Claims priority, application Japan, Sept. 17, 1971, 46-72578; Sept. 21, 1971, 46-73632; July 3, 1972, 47-66825**
**Int. Cl. F02p** *3/02*
**U.S. Cl. 123—148 E** **1 Claim**

In a capacitor discharge ignition system of the type known in the art in which energy from a battery is charged in a capacitor through a DC-DC converter and the charge thus stored in the capacitor is discharged through the primary winding of an ignition coil upon the conduction of a rectifier having a control electrode under the control of a gate control circuit thereby causing a high voltage in the secondary winding of the ignition coil, the improvement comprising the use of an arc duration extending ignition coil having a higher number of turns than the regular ignition coil and connected in series or parallel therewith, whereby a rapidly rising high voltage generated by the regular ignition coil is combined with a gradually rising, long duration, high voltage generated by the




arc duration extending ignition coil to thereby produce a rapidly rising, long duration, high voltage at the output terminal of the ignition system.

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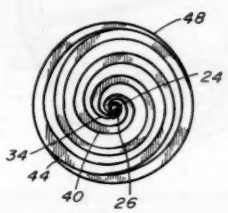
**3,837,327**
**BOWSTRING SILENCER FOR ARCHERY BOW**

**Charles A. Saunders, and Francis Eugene Saunders, both of Columbus, Nebr., assignors to Saunders Archery Co., Columbus, Nebr.**

**Filed Nov. 19, 1973, Ser. No. 417,139**
**Int. Cl. F41b** *5/00*
**U.S. Cl. 124—30 A** **11 Claims**




A bowstring silencing weight including a bowstring gripping tubular central shaft and a resilient band integral with the central shaft and convoluted therearound to define a spirally wound spring-like coiled ribbon encircling and carried by a bowstring to dampen noise producing vibrations between nodes normally established upon release of a drawn bowstring. The bowstring silencer may also have a plurality of convoluted resilient bands that are attached to the central shaft.

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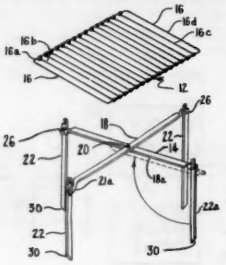
**3,837,328**
**COLLAPSIBLE GRILL**

**James L. Schaffer, Los Gatos, Calif., assignor to John A. Marlo, Aptos, Calif., a part interest**

**Filed Aug. 14, 1972, Ser. No. 280,742**
**Int. Cl. F24c** *15/18;* **A47j** *37/04;* **F16m** *11/00*
**U.S. Cl. 126—29** **4 Claims**

A collapsible grill for camping, the grill having a grate with a plurality of interlinked cross members which can be rolled up

or opened to a rectangular grate, the grate is supported on a pair of crossed support members which are elevated above the



ground by four support legs hinged thereto, the legs having a notched projection to which the corners of the grill can be attached.

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**3,837,329**

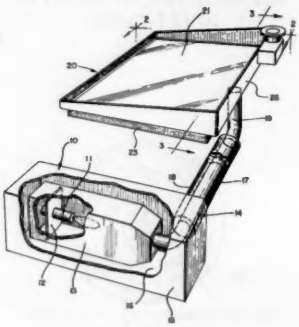
**LIQUID FUEL-FIRED GRILLE**

**Paul A. Mutchler, University City, Mo., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.**

**Filed July 5, 1973, Ser. No. 376,662**

**Int. Cl. F24c** *3/06*

**U.S. Cl. 126—44** **7 Claims**



A cooking surface or grille heated uniformly by the products of combustion from a liquid fuel-fired burner, wherein the products of combustion are caused to flow beneath the cooking surface of the grille through inverted V-shaped channels which define gas-tight passageways that extend from the back to the front of the grille and in the opposite direction through adjacent V-shaped gas-tight channels alternating with the inverted V-shaped channels to provide an efficient and uniform transfer of heat energy from the combustion gases to the cooking surface of the grille.

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**3,837,330**

**HEAT-RETAINING SERVER**

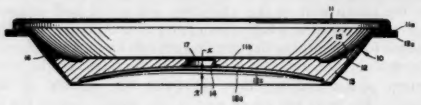
**Richard W. Lanigan, Arlington Heights, and Oleg Szymber, Elk Grove, both of Ill., assignors to American Hospital Supply Corportion, Evanston, Ill.**

**Filed Mar. 28, 1973, Ser. No. 345,532**

**Int. Cl. A47g** *23/04*

**U.S. Cl. 126—246** **10 Claims**

A hollow food serving dish having upper and lower metal shells with a rigid heat-retaining member disposed therebetween. the shells are imperforate and are hermetically sealed together along their peripheral edges. Limited expansion is permitted upon heating, but the danger of bursting is



avoided because of the secure interconnection between the upper shell and the rigid member and because of the interfitting relationship between the rigid member and the bottom shell with its concave configuration and peripheral shoulder.

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**3,837,331**

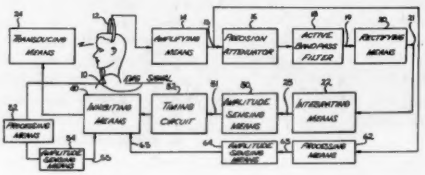
**SYSTEM AND METHOD FOR CONTROLLING THE NERVOUS SYSTEM OF A LIVING ORGANISM**

**Sidney A. Ross, 10535 Cedros Ave., Mission Hills, Calif. 91340**

**Filed Oct. 24, 1972, Ser. No. 299,842**

**Int. Cl. A61b** *5/05, 19/00*

**U.S. Cl. 128—1 C** **24 Claims**



A novel method for controlling the nervous system of a living organism for therapeutic and research purposes, among other applications, and an electronic system utilized in, and enabling the practice of the invented method. Bioelectrical signals generated in specific topological areas of the organism's nervous system, typically areas of the brain, are processed by the invented system so as to produce an output signal which is in some way an analog of selected characteristics detected in the bioelectrical signal. The output of the system, typically an audio or visual signal, is fed back to the organism as a stimulus. Responding to the stimulus, the organism can be trained to control the waveform pattern of the bioelectrical signal generated in its own nervous system.

The invention system comprises means for frequency filtering, rectifying, integrating and amplifying. In addition, the system includes means for transducing the processed signal and displaying it as an output to the subject.

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**3,837,332**

**VOICE-OPERATED GAS LAMP STROBOSCOPES**

**Siegfried S. Meyers, Harrisonburg, Va., assignor to Madison College Foundation, Inc., Harrisonburg, Va., a part interest**

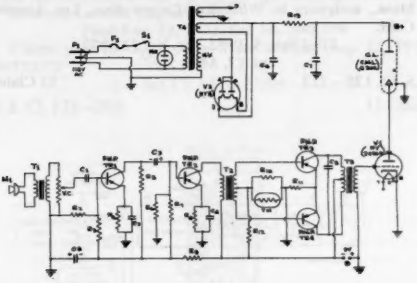
**Continuation of Ser. No. 191,240, Oct. 21, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,848**

**Int. Cl. A61b** *5/00*

**U.S. Cl. 128—2 R** **3 Claims**

Apparatus for producing light flashes responsive to vocal sound vibrations having a flashing rate related to the vocal sound frequencies, for use by physicians as a light source for light to be reflected into a patient's throat for observation by the physician of the behavior and condition of the vocal chords. The apparatus is in the form of a voice-operated stroboscope comprising a normally nonconductive trigger vacuum tube which is controlled by an audio frequency ampli-

fier coupled to an acoustic transducer activated responsive to vocal sounds produced by the patent. The trigger vacuum tube



is connected to a stroboscopic lamp to produce light flashes approximately synchronized with the audible vibrations of the patient's vocal chords.

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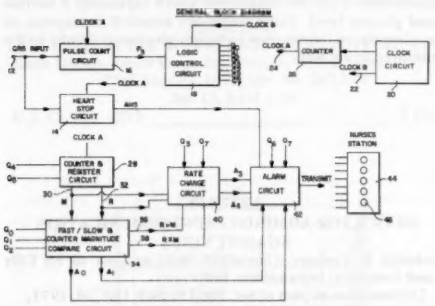
**3,837,333**
**HEART SURVEILLANCE DEVICE**
**Arthur Jay Bruckheim, 6015 Landon Ln., Bethesda, Md. 20034**
**Filed Apr. 19, 1973, Ser. No. 352,659**
**Int. Cl. A61b** *5/04*
**U.S. Cl. 128—2.06 F** **14 Claims**



A device which monitors the interval between every other heartbeat to determine if the heart rate is too fast or too slow. The previously monitored interval is compared to the present interval to determine whether there has been an abrupt change of heart rate and if there has been a change of heart rhythm. Time intervals are measured digitally using a first pulse train and the determinations are made digitally between two pulses of said first pulse train under the control of a second pulse train. The occurrence of every heart beat is monitored to determine if the heart has stopped beating.

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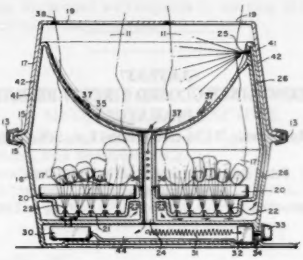
**3,837,334**
**FOOTSPA CABINET**
**Hattie Johnson, Bronxville, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Jan. 26, 1973, Ser. No. 326,883**
**Int. Cl. A61h** *29/00*
**U.S. Cl. 128—24.3** **2 Claims**

A footspa cabinet for bathing and exercising the legs and feet of the user under a spray of hot water. Rollers are mounted in the cabinet under the location of the feet, to permit the foot muscles to be exercised. The apparatus includes a pump which forces a spray of water against each enclosed leg and foot, and a heater which maintains the recirculated water



at a temperature regulated by a thermostat. The enclosure of the cabinet is formed of two shells which buckle together to form a waterproof sealed housing and to enclose both legs and feet of a user.

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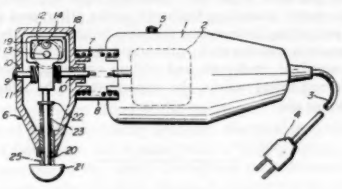
**3,837,335**
**MASSAGING VIBRATOR**
**Akihiko Teranishi, Aichi-ken, Japan, assignor to Kabushiki Kaisha Teranishi Denki Seisakusho, Aichi-ken, Japan**
**Filed Apr. 13, 1973, Ser. No. 350,937**
**Claims priority, application Japan, Apr. 21, 1972, 47-46643; Apr. 21, 1972, 47-46644; Apr. 21, 1972, 47-46645; Apr. 21, 1972, 47-46646; Apr. 21, 1972, 47-46647; Apr. 21, 1972, 47-46648**
**Int. Cl. A61h** *7/00*
**U.S. Cl. 128—52** **5 Claims**



A massaging vibrator gives instantaneous shocks to desired body parts of a person, and at the same time, the vibrations of the mechanism are moderate and a good effect is produced.

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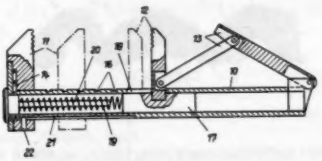
**3,837,336**
**MASSAGING APPARATUS**
**Bernard Taubert, 27 chemin Sous Caran, Vesenaz, Switzerland**
**Filed Mar. 16, 1973, Ser. No. 342,187**
**Int. Cl. A61h** *7/00*
**U.S. Cl. 128—59** **3 Claims**



A massaging apparatus for the treatment of cellulitis includes a pair of jaws slidably mounted along a tube, and hand-

actuated lever means for relatively moving the jaws together against the action of spring means. Means are provided for adjusting the mean separation of the jaws, which can be engaged about different parts of the body to be treated.

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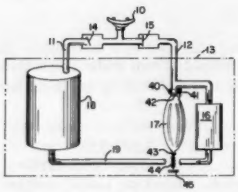
**3,837,337**
**SELF-CONTAINED CLOSED CIRCUIT BREATHING APPARATUS**

**Paul Alex LaViolette, 1176 Hedgewood Ln., Schenectady, N.Y. 12309**

**Filed Jan. 29, 1973, Ser. No. 327,769**
**Int. Cl. A62b** *7/04*
**U.S. Cl. 128—142.2** **8 Claims**



The breathing apparatus provides a chemical canister, an expansible reservoir for positive pressure on the upstream side thereof, a contractible reservoir for negative pressure on the downstream side thereof, and suitable connecting conduits and a mouthpiece to provide a closed breathing circuit. The negative pressure reservoir comprises rigid top and bottom walls, a spacer extending from one to the other, and a rubber sleeve extending from one to the other so that it will be bowed in when air is withdrawn by inhalation. By enclosing the parts in a watertight enclosure and adding an oxygen bottle and suitable regulating valves, the apparatus can be adapted for underwater use.

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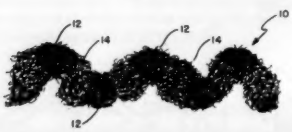
**3,837,338**
**CONFORMABLE NONWOVEN BANDAGE**

**Sheldon R. Chesky, Algonquin; Donald Patience, Barrington, and Edward G. Hartigan, Schaumburg, all of Ill., assignors to The Kendall Company, Walpole, Mass.**

**Filed Nov. 24, 1972, Ser. No. 309,086**
**Int. Cl. A61l** *15/00*
**U.S. Cl. 128—156** **3 Claims**

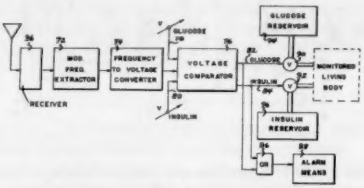


A felted cellulosic nonwoven fabric, in which the fibers have substantial freedom of movement relative to each other, is mechanically compacted into a series of undulations, to yield a bandage material that does not decrease in width when elongated by 10% or more.

**3,837,339**
**BLOOD GLUCOSE LEVEL MONITORING-ALARM SYSTEM AND METHOD THEREFOR**

**Sol Aisenberg, Natick, and Kuo Wei Chang, Lexington, both of Mass., assignors to Whittaker Corporation, Los Angeles, Calif.**

**Filed Feb. 3, 1972, Ser. No. 223,077**
**Int. Cl. A61b** *5/07*
**U.S. Cl. 128—213** **11 Claims**



A method and apparatus for monitoring blood glucose levels. In the preferred embodiment a glucose diffusion-limited fuel cell is implanted in a living body. The output current of the fuel cell is proportional to the glucose concentration of the body fluid electrolyte and is therefore directly indicative of the blood glucose level. This information is telemetered to an external receiver which generates an alarm signal whenever the fuel cell output current exceeds or falls below a predetermined current magnitude which represents a normal blood glucose level. Valve means are actuated in response to the telemetered information to supply glucose or insulin to the monitored living body.

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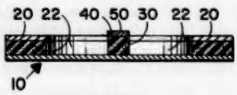
**3,837,340**
**DEVICE FOR ADMINISTERING IMMUNICATION AGAINST VIRUS**

**Frederick T. Counter, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**Continuation-in-part of Ser. No. 190,869, Oct. 20, 1971, abandoned. This application June 4, 1973, Ser. No. 367,089**
**Int. Cl. A61m** *13/00;* **A61b** *17/20*
**U.S. Cl. 128—260** **9 Claims**



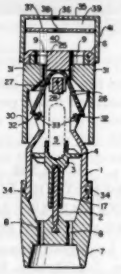
Live avirulent virus used to immunize against smallpox, measles, or mumps, or a combination of them, is applied as a dry deposit on a physiologically inert surface of a device adapted to be held against the unbroken skin of an animal to be immunized. Illustratively, cowpox virus as a dry surface deposit is applied at the midpoint of a plastic bandage; it is used by applying the bandage for a period of time to a body site at which the immunization is to be applied.

3,837,341

## MEDICAMENT INHALATION DEVICE WITH AUDIBLE INDICATING MEANS

John Howard Bell, Loughborough, England, assignor to Fisons Limited, London, England

Filed Aug. 23, 1973, Ser. No. 390,739
Claims priority, application Great Britain, Aug. 23, 1972, 39173/72
Int. Cl. A61m 15/06
U.S. Cl. 128—266 12 Claims



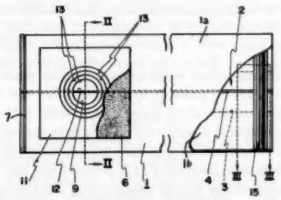
There is described an inhalation device, which is adapted to administer a medicament to the lungs and to be activated by the inspiration of the user, in combination with means adapted to indicate audibly when a desired air flow through the device is achieved.

3,837,342

## EXCREMENT RECEIVING BAG FOR ARTIFICIAL ANUS

Koda Mitsuo, 16-18 Inage-dai, Shi-ken, Chiba, Japan

Filed Aug. 23, 1972, Ser. No. 283,228
Int. Cl. A61f 5/44
U.S. Cl. 128—283 1 Claim



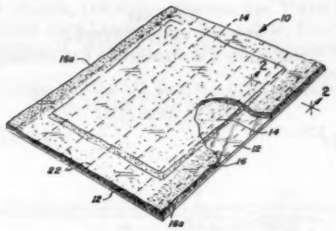
A flattened tube of flexible sheet material has first and second elongated walls united along their longer edges to form the tube. The second wall is wider than the first wall and has at least one pleating extending longitudinally substantially centrally thereof. When the pleating is folded, the effective width of the second wall is reduced to the width of the first wall so that the two walls are superposed to form an initially flat tube. The ends of the tube may be closed in a suitable manner, preferably by means of plastic zippers so that the bag may, if desired, be vented. A layer of pressure sensitive adhesive is applied to the outer surface of the first wall near one end thereof, and a peelable cover sheet of paper or the like is adhered to the adhesive and has a plurality of concentric circles delineated on its outer surface each having a diameter corresponding to that of a respective artificial anus. The cover sheet has a perforated fold line extending diametrically of the smallest circle so that the first wall and the cover sheet are foldable along this perforated fold line to form superposed congruent semicircles. The cover sheet and the first wall may be cut along a selected pair of congruent semicircles to form a circular opening corresponding to a respective artificial anus, and the cover sheet is then peeled from the adhesive to expose the adhesive for contact with the body of the user. During use of the bag, the second wall expands by opening of its pleating, to accommodate the excrement.

3,837,343

## DISPOSABLE DIAPER, FABRIC USEFUL THEREIN, AND METHOD OF MANUFACTURE

Frederick K. Mesek, Downers Grove, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 187,249, Oct. 7, 1971, Pat. No. 3,730,184. This application Mar. 27, 1973, Ser. No. 345,398The portion of the term of this patent subsequent to May 1, 1990, has been disclaimed.
Int. Cl. A61f 13/16
U.S. Cl. 128—287 17 Claims



A non-woven fabric is disclosed which comprises a highly water-absorbent web of mixed long and short fibers that is through-bonded throughout its dimensions with a binder (adhesive) to retain the fibers in their assembled relationship. In the final set stage of the binder it is hydrophobic in character and hence the resulting fabric is rendered more or less water repellent. In the invention the mid-portion of the bonded fabric is treated with a wetting agent (surfactant) to minimize the water-repellent effect of the binder and to make the mid-portion of the fabric readily wettable. Marginal portions of the bonded fabric are not treated with a wetting agent, so that these portions of the fabric throughout their dimensions are more or less water repellent. By this is meant that the marginal portions of the bonded fabric are difficultly wettable as compared to the mid-portion of the fabric. As indicated, the binder material at the side edges of the fabric is present throughout the thickness of the fabric, and hence it is effective to prevent liquid that is wetted into the central portion of the fabric from wicking readily outwardly. The fabric of the invention has particular utility as a facing layer in a disposable diaper that includes an absorbent pad and a water repellent backing member, since it minimizes liquid leakage from the side edges of the diaper.

In another embodiment, the portions of the fabric not treated with wetting agent include periodic bands across the continuous length of the fabric spaced apart so that when the continuous fabric is cut into facing fabric lengths, the end margins of the facing fabric will also be more or less water-repellent.

3,837,344

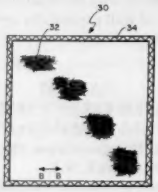
## LAPAROTOMY SPONGES

Donald Patience, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Oct. 20, 1972, Ser. No. 299,366
Int. Cl. A61f 13/00
U.S. Cl. 128—296 3 Claims

A laparotomy sponge is formed from a multiplicity of plies of open-meshed bleached absorbent gauze of a cover factor of

not greater than 3.5, wherein the yarns of each ply are kinked, convoluted, and twisted into interengagement with the adjacent plies of gauze. The plies are thereby held together in relatively non-displaceable relationship, and the sponge has increased loft and elasticity.



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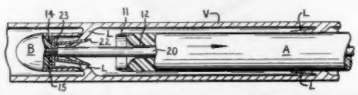
### 3,837,345
### VENOUS VALVE SNIPPER

**Adel F. Matar, 4226 S.W. Downsview Ct., Portland, Oreg. 97205**

**Filed Aug. 31, 1973, Ser. No. 393,653**
**Int. Cl. A61b** *17/32*
**U.S. Cl. 128—305** **7 Claims**



A cylindrical catheter-type instrument has a tubular member slidable lengthwise relative to a distal head member. The instrument may be inserted in the distal end of a vein in closed position causing it to pass through the venous valves in the direction of normal blood flow. When the instrument is partially withdrawn in open position the venous valve leaflets protrude into a gap between the tubular and head members and become impaled on spikes in the head member. Then the tubular member is closed on the head member causing an annular cutting blade on the tubular member to snip off the valve leaflets. Opening and closing of the head and tubular members is accomplished by a scissors-type handle connected to the two parts.

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### 3,837,346
### FOLEY CATHETER CONTAINING CHOLESTEROL

**Paul C. Adlaf, Park Ridge, Ill., assignor to The Kendall Company, Walpole, Mass.**

**Filed Feb. 12, 1973, Ser. No. 331,771**
**Int. Cl. A61m** *25/00*
**U.S. Cl. 128—349 R** **2 Claims**

The incorporation of cholesterol in natural rubber Foley catheters results in an improved resistance to urinary salt calcification.

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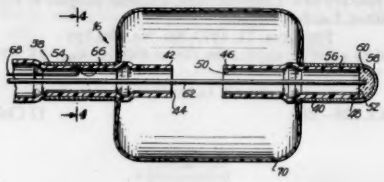
### 3,837,347
### INFLATABLE BALLOON-TYPE PACING PROBE

**Allen J. Tower, Old Bridge, N.J., assignor to Electro-Catheter Corporation, Rahway, N.J.**

**Filed Apr. 20, 1972, Ser. No. 245,938**
**Int. Cl. A61n** *1/04*
**U.S. Cl. 128—404** **8 Claims**

A catheter device having a tubular assembly with a forward probe portion including spaced proximal and distal members having electrodes secured thereto and being provided with inflatable means comprising a balloon member interconnecting said members; and fluid receiving means in communication with the probe portion for dilating said balloon member upon exposure to fluid introduced under pressure through the fluid-receiving means.



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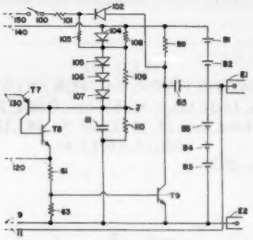
### 3,837,348
### EXTERNALLY-CONTROLLED IMPLANTABLE CARDIAC-PACER CAPTURE MARGIN TESTING APPARATUS AND METHOD

**Sherwood S. Thaler, Lexington, Mass., assignor to American Optical Corporation, Southbridge, Mass.**

**Filed Jan. 10, 1972, Ser. No. 216,601**
**Int. Cl. A61n** *1/36*
**U.S. Cl. 128—419 P** **2 Claims**



Externally controlled implantable cardiac pacer and heart testing apparatus. Apparatus is disclosed for use with an implantable heart-stimulating device to initiate a test mode for investigating several electro-medical areas including the implanted power source. In one test mode, induced continuous heart stimulation is provided at a stimulation rate dependent upon the level of the power source thus providing an indication of remaining life of the power source. This test mode also provides test-stimuli each of which has its energy reduced by a pre-determined amount to indicate degree of capture-margin available. One of the external controls disclosed causes another test mode in which all heart stimulation ceases and provides a physician with an opportunity to check the patient's heart and heart rate under non-stimulative conditions.

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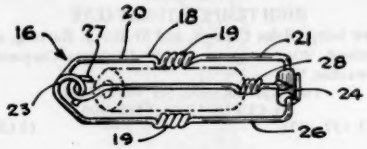
### 3,837,349
### HAIR WAVING PRODUCTS AND PROCESS

**John E. Jedzinak, Suffern, and Ronald Zukoski, Spring Valley, both of N.Y., assignors to Avon Products, Inc., Suffern, N.Y.**

**Filed Mar. 4, 1971, Ser. No. 121,154**
**Int. Cl. A61k** *7/00*
**U.S. Cl. 132—7** **8 Claims**

This invention relates to hair waving products comprising a film formed of a water-soluble film-former and containing a composition capable of waving hair and of being released from the film when water is applied thereto, and to the process of treating hair using such products.

3,837,350
**TENSION (BOBBY) PIN**
James L. Terrell, 704 Clinton St., and Jerome Curry, 715 Kennard St., both of Waukegan, Ill. 60085
Filed Mar. 21, 1972, Ser. No. 236,684
Int. Cl. A45d 8/24
U.S. Cl. 132—48 R 6 Claims




A spring type tension main body section in the form of a loop having one fastener arm or pin which carries a felted bobby roll with a hook at the very top and at the bottom is a hinge with a spring between the ends of the arm. The arm is hooked onto the main body section which is bent upon itself to form a depending torsion loop for receiving the hook on the end of the pin. The hook latches to the loop and locks the pin. The spring at the middle of the pin acts to tighten (pull) the hair as well as tension the springs on both sides of the pin and the springs of the body section can act to take strain off the middle spring arm or pin so it will not pull the scalp of the head.

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3,837,351
**INTERDENTAL TOOTH CLEANER AND METHOD FOR MAKING SAME**
Thomas F. Thornton, 221 Mill Rd., New Canaan, Conn. 06840
Filed Feb. 15, 1973, Ser. No. 332,669
Int. Cl. A61c 15/00
U.S. Cl. 132—89 8 Claims

A continuous length of interdental tooth cleaner consisting of textured yarn that is composed of deformed filaments that are covered with a hardened resin to stiffen them and in which the yarn is processed to increase its normal bulkiness.

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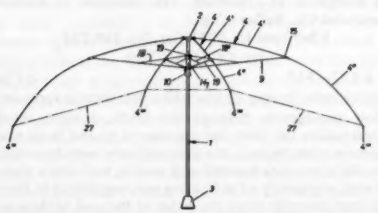
3,837,352
**UMBRELLA**
Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed June 26, 1973, Ser. No. 373,868
Claims priority, application Germany, July 8, 1972, 2233645
Int. Cl. A45b 11/00, 19/06
U.S. Cl. 135—25 R 4 Claims



An umbrella having a frame and a canopy which is open to an approximate elliptical shape, such as to accommodate two people. The frame includes dome ribs hinged to a crown wherein the dome ribs have extended lengths along the major axis of the so-formed ellipse and shortened lengths along the minor axis of the so-formed ellipse. There are stretcher members hinged to a main sliding runner on the stick with lengths corresponding to the lengths of the dome ribs and there are two groups of strut members hinged to the stretcher members and to the respective hinge areas on the stick wherein at least one group of the strut members is hinged to a sliding runner for relative movement away from the other roup of struts hinged at an area of the stick and arranged such that when the umbrella is closed, the telescoped dome ribs are of substantially equal length.

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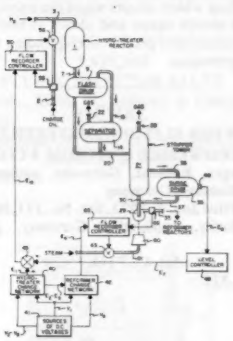
3,837,353
**APPARATUS AND METHOD FOR CONTROLLING THE LEVEL OF OIL IN A SURGE DRUM**
Walker L. Hopkin, 119 Matisse, Houston, Tex. 77024; Leland A. Chvatal, 3949 Lansing Ave., Port Arthur, Tex. 77640, and William D. White, 812 S. 10th St., Nederland, Tex. 77627
Division of Ser. No. 214,322, Dec. 30, 1971. This application Jan. 16, 1973, Ser. No. 324,007
Int. Cl. G05d 9/12
U.S. Cl. 137—8 8 Claims



Apparatus controls the level of oil in a surge tank in a processing unit of a refining system, receiving a charge liquid and which in turn provides a charge liquid to a second processing unit of the refining system. A signal is provided corresponding to a desired change $\Delta F_R$ to be made in the flow rate of the second processing unit charge liquid. A first change network receiving the change signal determines the magnitude of the desired change to the second processing unit charge liquid flow rate and provides a flow rate signal for controlling the first processing unit charge liquid flow rate in accordance with the desired change signal. The change $\Delta F_H$ in the first processing unit charge liquid flow rate may be equal to or some portion of the change $\Delta F_R$ to be made in the second processing unit liquid flow rate depending on the magnitude of the change signal. The change $\Delta F_H$ differs in different proportions depending on the magnitude of the change $\Delta F_R$. The network includes an absolute value circuit which provides a signal corresponding to the magnitude of the change signal. The change in the second processing unit charge liquid flow rate is delayed for a predetermined time interval and then implemented. The duration of the time interval is also determined as a function of the magnitude of the change $\Delta F_R$.

3,837,354

## HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

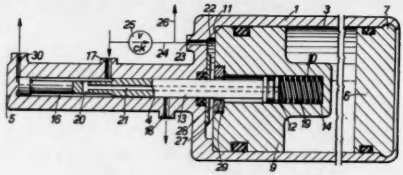
Glyn Philip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England

Filed June 7, 1972, Ser. No. 260,382

Claims priority, application Great Britain, July 10, 1971, 32482/71; Sept. 24, 1971, 44618/71; Nov. 16, 1971, 53152/71; Feb. 28, 1972, 8459/72

Int. Cl. G05d *11/00*

U.S. Cl. 137—118 11 Claims



A priority valve assembly for a power braking system includes a housing having a stepped cylinder bore, valve means located between an inlet and an outlet leading into the smaller diameter bore portion, and an operating member for the valve means linked to a piston working in the larger diameter bore portion, one side of the piston being resiliently loaded and the other side forming an accumulator chamber for hydraulic braking fluid. Either the valve means or the operating member is arranged to be movable relative to the piston in response to the pressure drop which occurs when the valve means open so that the valve means opens and closes at two different positions of the accumulator piston corresponding to two different accumulator pressures.

3,837,355

## APPARATUS FOR BLEEDING METERED INCREMENTS OF A COMPRESSED GAS FROM A CONTAINER

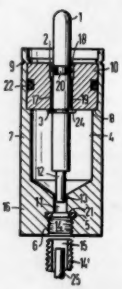
Winfried Wirges, Koblenz, Germany, assignor to Stabilus G.M.B.H., Koblenz, Germany

Filed Jan. 5, 1973, Ser. No. 321,382

Claims priority, application Germany, Jan. 8, 1972, 2200893

Int. Cl. F16k *15/20*

U.S. Cl. 137—322 9 Claims



Metered increments of a gas under superatmospheric pressure are bled from a container equipped with a nipple and a valve in the nipple normally closed by the gas pressure in the container into a vessel equipped with a receptacle matching the nipple and a rod which can be shifted manually into a bleeding position in which it enters the receptacle and the nipple therein to open the valve and to admit gas to the vessel cavity through the receptacle while another opening, leading from the cavity to the ambient atmosphere, is sealed by a valve ring on the rod. Gas pressure in the cavity tends to move the rod from its bleeding position outward of the receptacle into a venting position in which it permits the valve on the container to close, and the valve ring permits compressed gas to be vented to the atmosphere from the vessel cavity.

3,837,356

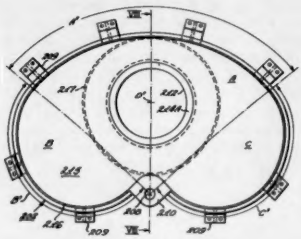
## HIGH TEMPERATURE VALVE

Andrew Selep; Hales Corners, and Walter J. Hartwig, all of Hartland, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Apr. 20, 1973, Ser. No. 353,207

Int. Cl. F16l *59/16*; F16k *3/06*

U.S. Cl. 137—375 12 Claims



There is provided in accordance with one embodiment of the invention a valve for use under high temperature conditions including a linearly slidable valve member made of silicon carbide and having a valve aperture therein which is slidably movable into or out of registry, or into varying degrees of registry with a fluid passage through the stationary valve bonnet. The slidable silicon carbide valve member cooperates with stationary valve seats in the stationary bonnet structure, which valve seats are also made of silicon carbide. The slidable valve member is guided in its sliding movement by channel-shaped guide members in the stationary bonnet, the guide members also being made of silicon carbide. The stationary valve bonnet in which the slidable valve member is mounted for sliding movement is provided with an outer metal housing of carbon steel or the like and a wall of thermally insulating refractory is interposed between the silicon carbide members (including the slidable valve element) and the metal housing to maintain the metal housing at a sufficiently low temperature to prevent thermal damage to the metal housing.

3,837,357

## CHECK VALVE

Lomis Slaughter, Jr., Houston, Tex., assignor to Anderson, Greenwood Co., Bellaire, Tex.

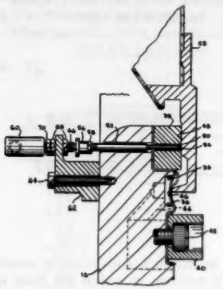
Filed June 13, 1973, Ser. No. 369,724

Int. Cl. F16k *37/00*

U.S. Cl. 137—554 6 Claims

A check valve having a body with a seat therein surrounding the flow passageway through the body, a valve member mounted within the body for movement to and from sealing engagement with the seat, the seat and valve member coacting to provide a pressure boosted soft seating seal and a metal to metal seal, a plurality of indicating pins supported in the seat and spaced inwardly from the outer of the seat sealing areas, the pins being positioned to be engaged by the valve member on seating, a sensor associated with each of the pins, closure indicating means connected to the sensors with the sensors in series so that actuation of all of the sensors by seating of the

valve member actuates the indicating means to indicate closure of the valve member. This abstract is neither intended to



define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

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**ERRATUM**

For Class 137—610 see:
Patent No. 3,837,411

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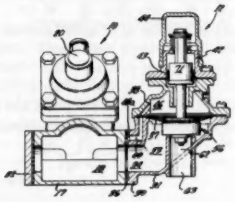
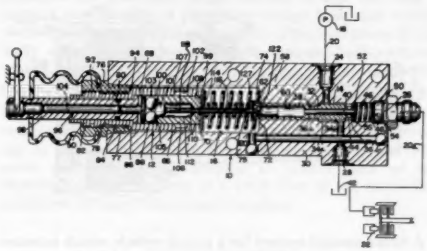
**3,837,358**
**BACKFLOW PREVENTER VALVE ASSEMBLY**
**Clifford V. Zieg, and William Yelich, both of Costa Mesa, Calif., assignors to Cla-Val Co., Costa Mesa, Calif.**
**Filed Dec. 6, 1971, Ser. No. 205,022**
**Int. Cl. E03b 7/07**
**U.S. Cl. 137—614.2** **23 Claims**



Two series-related check valves are separated by a chamber (the "zone") adapted to be drained by a relief valve in order to insure against backflow of water through the check valve which is nearest the water main. The relief valve incorporates a poppet which is operated by the combined actions of a single diaphragm assembly and a single bellofram assembly, together with a spring which biases the poppet toward open position. The valve seat for the poppet has an effective diameter slightly greater than that of the bellofram assembly, whereby to create a seating pressure which maintains the poppet fully closed at all times except when there is an actual or incipient backflow condition. The poppet seat is beveled in a manner which creates valve-opening forces in response to initial cracking of the poppet off its seat. Furthermore, the clamping disc for the poppet is shaped to cause additional valve-opening forces to be present upon such cracking of the poppet.

**3,837,359**
**HYDRAULIC CONTROL VALVE WITH PRESSURE SENSITIVE LATCH**
**Vaughn A. Nelson, Downers Grove; Donald K. Fadden, Clarendon Hills, and Richard J. Lech, Chicago, all of Ill., assignors to International Harvester Company, Chicago, Ill.**
**Filed May 18, 1973, Ser. No. 361,661**
**Int. Cl. F15b 13/01**
**U.S. Cl. 137—624.27** **2 Claims**



A valve having a fluid control spool and detent assembly for securing the spool in a predetermined position. The detent is secured by the interaction of a ball series and a groove, the holding force being delivered by hydraulic pressure. A detent release is actuated by a fall in hydraulic pressure thereby unlocking the balls. Springs return the detent and spool to a neutral position upon release.

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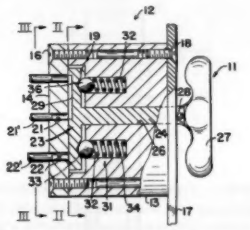
**3,837,360**
**FLUIDIC SELECTOR VALVE**
**Thomas J. Bubula, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.**
**Filed Sept. 20, 1972, Ser. No. 290,552**
**Int. Cl. F16k 11/02**
**U.S. Cl. 137—625.46** **1 Claim**

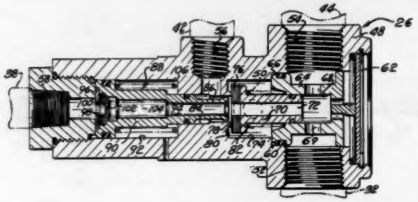


A fluidic switch for connecting a first fluid signal line with any selected one of a plurality of additional signal lines has a housing forming a chamber with an end wall having a first port and a plurality of additional ports spaced equiangularly therearound. A rotatable plate is disposed in the chamber and has a radial fluid passage which is permanently communicated with the first port and which may be selectively communicated with any of the additional ports by rotation of the plate through control means extending externally of the housing. Sealing of the contacting surfaces of the plate and end wall is accomplished by the same means which provides a detenting action at each of the several switch positions. Specifically a plurality of springs act between the housing and the plate to urge the plate against the end wall with the spring force being transmitted to plate through spherical elements which seat in indentations in the plate surface at each of the positions of the switch to yieldably resist rotation of the plate.

## 3,837,361
## EMERGENCY CONTROL VALVE

John A. Urban, Livonia; Gary L. Hopkins, Southfield, and John Keith Armstrong, Livonia, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 192,438, Oct. 26, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 342,894
Int. Cl. B60t 15/60
U.S. Cl. 137—627.5 8 Claims



A brake control system for a towed vehicle which includes an emergency control valve operative in combination with an anti-skid system to provide emergency brake control in the event service pressure is lost. The emergency control valve senses the pressure level in the emergency line and supplies brake apply pressure from a reservoir on the towed vehicle when the emergency line pressure falls below a predetermined level. The valve is also usable with spring brakes such that the spring brakes provide a back-up parking brake without overriding the anti-skid control during emergency operation.

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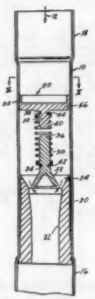
## 3,837,362
## FLUID FLOW CONTROL

Gene A. Barnes, De Kalb, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 23, 1972, Ser. No. 256,149
Int. Cl. F15d 1/02
U.S. Cl. 138—45 1 Claim

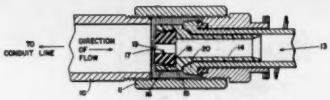


An economical, accurate and efficient constant rate flow control operable at low pressure, high flow rates and high temperature comprises a tubular conduit fitting having a flow restrictor therein with a metering pin means movably mounted adjacent to the restrictor by means such as a coil spring so that movement of the pin means relative to the restrictor will vary the flow through the restrictor. As fluid flows past the pin means a pressure drop is created thereacross in proportion to the flow and the pin means is moved in response to the pressure drop whereby as the flow tends to vary, the pressure drop tends to vary proportionately and thereby maintain a relatively constant flow through the control. The restrictor is removable and by merely replacing it with one of another size the flow capacity may be varied.

## 3,837,363
## FLOW CONTROL DEVICE

Petro W. Meronek, R.R. No. 1, Osoyoos, British Columbia, Canada

Filed Dec. 20, 1972, Ser. No. 316,668
Int. Cl. F16d 1/00
U.S. Cl. 138—45 5 Claims




An apparatus to maintain a substantially constant rate of fluid flow through a conduit in which the fluid is subject to variations in static head pressure. A regulating control element responsive to the pressure variations is mounted within a hollow insert casing to form a flow control device in a self-contained capsule form which is insertable within the conduit.

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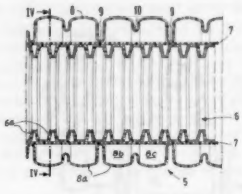
## 3,837,364
## FLEXIBLE SHEATH FOR TACHOMETER SHAFTS OR THE LIKE

Heinrich Jenner, Hassfurt/Main, Germany, assignor to Fränkische Isolierrohr-und Metallwaren-Werke Gebr. Kirchner, Konigsberg/Bayern, Germany

Filed Nov. 21, 1972, Ser. No. 308,330
Claims priority, application Germany, Nov. 25, 1971, 7144438
Int. Cl. F16l 11/12
U.S. Cl. 138—122 20 Claims

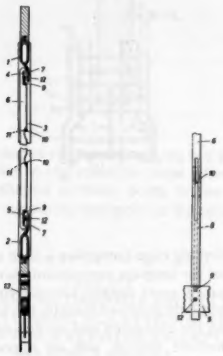


A synthetic plastic soundproofing and heat-insulating sheath for a tachometer shaft has a thin-walled flexible cylindrical tube which surrounds a first set of hollow flexible ribs and is surrounded by a second set of hollow flexible ribs. The ribs of the first set may constitute circumferentially complete annuli or one or more helices, and the ribs of the second set may extend in parallelism with the axis of the tube or constitute circumferentially complete annuli or one or more helices. The profile of the ribs is rectangular or trapeziform, and the width of helical or annular ribs of the second set may exceed the width of ribs of the first set, as considered in the axial direction of the tube. The ribs of one or both sets may form part of a discrete corrugated tube which is surrounded by or surrounds the cylindrical tube, or portions of the ribs of at least one set may form part of a second tube which is spaced apart from and surrounds or is surrounded by the cylindrical tube.

## 3,837,365
## HEDDLE FRAME CENTER STRUT

**Walther Filter, Langenhagen, Germany, assignor to Vereinigte Osterreichische Eisen-Und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Etablissement Wanderfield & Co., Schaan, Liechtenstein**

**Filed July 30, 1973, Ser. No. 383,809**
**Int. Cl. D03c** *9/06*
**U.S. Cl. 139—92** **4 Claims**

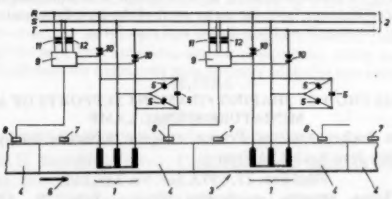


A center strut assembly comprises a strut having at each end a recess and a longitudinal duct open into said recess, and two rod-shaped locking members, each of which is slidably mounted in one of said ducts and movable to a locking position, in which said locking member protrudes into the associated recess. Each of said locking members has opposite to the associated recess a resilient angled end portion. The strut is formed with two holes, each of which opens into one of said ducts, which is laterally open at said hole. Each of said angled end portions is arranged to resiliently engage one of said holes when said locking member is in said locking position.

## 3,837,366
## ELECTRICALLY OPERABLE TRAVELLING-FIELD RACE

**Claus Filter, Rethem, Aller, Germany, assignor to Vereinigte Osterreichische Eisen-Und Stahlwerke-Alpine Montan Aktiengesellschaft and Etablissement Wanderfield & Co., Vienna, Austria, and Schaan Liechtenstein**

**Filed Sept. 7, 1973, Ser. No. 395,297**
**Claims priority, application Austria, Sept. 15, 1972, 7915/72**
**Int. Cl. D03d** *49/44*
**U.S. Cl. 139—134** **2 Claims**

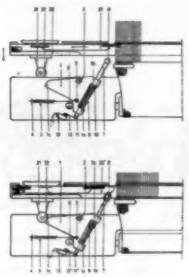


The race has a plurality of length sections and is operable to produce a travelling field adapted to move a movable body along said race so as to partly cover successive ones of said length sections in succession. The race also comprises a polyphase exciter winding having a plurality of polyphase winding sections, which are electrically disconnected from each other and arranged in respective ones of said length sections. Each of said polyphase winding sections consists of a plurality of phase windings. A plurality of capacitors are provided, each of which is connected in parallel to one of said phase windings and adapted to compensate a reactive current flowing in said phase winding. Non-contacting switching means are provided to apply an interlinked polyphase voltage to each of said polyphase winding sections when said body approaches the associated length section of said race and to remove said interlinked polyphase voltage from said winding section in response to the completion of the movement of said body along the associated length section. Said switching means comprise a plurality of thyristors which are connected to respective ones of at least all but one of said phase windings in each of said polyphase winding sections and adapted to be rendered conductive to apply said interlinked polyphase voltage to the associated polyphase winding section, and firing pulse generator means adapted to render each of said thyristors conducting only at a cross over of the interlinked polyphase voltage in the respective phase.

## 3,837,367
## SHUTTLE POSITIONING DEVICE

**Claude Laval, Castres, France, assignor to Lebocey Industrie, Aube, France**

**Filed Oct. 4, 1972, Ser. No. 294,802**
**Int. Cl. D03d** *49/48*
**U.S. Cl. 139—155** **5 Claims**



Device for loom for correcting the position of the weft-needle or of the shuttle at the moment of its arrival in its casing, and comprising a pivoting flange provided with a probe, this flange being positioned so that its pivoting movement can be controlled from the batten during the beating operation, the probe in addition being positioned on the flange so that during the beating operation it is applied to the rear end of the weft-needle or the shuttle when it arrives in its casing.

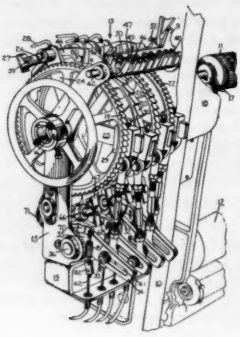
## 3,837,368
## FABRIC TAKE-UP MECHANISM FOR LOOMS

**Joseph M. Budzyna, E. Douglas, and William E. Turner, Hopedale, both of Mass., assignors to Rockwell International Corporation, Pittsburgh, Pa.**

**Filed Mar. 20, 1973, Ser. No. 343,127**
**Int. Cl. D03d** *49/20*
**U.S. Cl. 139—309** **3 Claims**

A take-up mechanism for a loom having a controlling ap-

paratus to selectively rotate the fabric take-up roll through any one of a plurality of predetermined distances during its in-



tended function for controlling and selectively varying the density of the weft yarn in the fabric.

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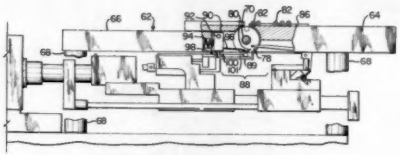
**3,837,369**

## APPARATUS FOR PROCESSING ELECTRONIC COMPONENTS

**William H. Bartell, Colorado Springs, Colo., assignor to The Vicon Instrument Company, Colorado Springs, Colo.**

**Filed Sept. 13, 1973, Ser. No. 396,856**
**Int. Cl. B21f *45/00***
**U.S. Cl. 140—1** **22 Claims**



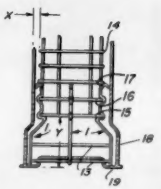
The principal sections of the apparatus include a stationary support, axially slidable head stock and tail stock on the support and movable in the bending zone to cooperate in bending electronic component leads, a transfer drum to move components from a load station to a discharge station, cutoff means to cut leads to desired length during the transfer operation, and a supply table surmounting the other sections. The components are fed from the supply table to the transfer drum at the load staion and lowered to the discharge station while relatively rotatable notched discs cut the leads to desired lengths. The components drop from the drum to a support finger on the head stock in the bending zone and are gripped in lateral attitude as the head stock moves toward the tail stock. With continued extension movement of head stock and tail stock, two bending arms on the head stock advance relatively and bend the leads to about 90°. The first bending arm may be held in retracted position to prevent bending contact, while the second bending arm always advances to form a bend so that one or both leads may be bent in the operation. Further, the second arm may be caused to swing laterally after the initial bend to swing its lead to 180° while the other lead remains straight.

**3,837,370**

## METHOD FOR MAKING A PIPE REINFORCING CAGE

**Robert H. Gates, Columbus, and Harold G. Schneider, Westerville, both of Ohio, assignors to Concrete Pipe Machinery Company, Sioux City, Iowa**

**Continuation of Ser. No. 135,093, April 19, 1971, abandoned. This application Sept. 15, 1972, Ser. No. 289,740**
**Int. Cl. B21f *27/20***
**U.S. Cl. 140—71 R** **5 Claims**



A pipe reinforcing cage comprises a cage unit and a bell assembly adapted for snap-on connection thereto. The bell assembly has spaced apart coaxial circular rings supported by longitudinal members attached thereto, the longitudinal members comprising the elongated end section of wire forms having an intermediate section and an opposite end section adapted to provide snap-on connection to the circumferential members of the cage unit. Said opposite end section has a tapered portion that contacts the first circumferential member of the cage unit as the bell unit is pushed into contact with said cage unit, causing the wire form to be deflected outward so as to pass toward and around said cage unit until a first loop section of the wire form is opposite said first circumferential member of the cage unit, at which point the wire form springs inward so that the said first circumferential member is positioned within said loop section. This loop section has a tapered portion on its backside. Further pushing of the bell assembly toward the cage unit results in deflection of the wire form again so that said bell assembly moves toward the cage unit until the second circumferential member of the cage unit is positioned opposite said first loop section and the first circumferential member is positioned opposite a second loop section of the wire form. At this point, the wire form springs back to its original orientation, with the circumferential members of the cage unit thus snapped into position within the respective loop sections of the wire form. The second loop section of the wire forms has a flat portion on its backside. The second loop section of the wire forms said flat portion being positioned perpendicular to the directions of movement of said bell assembly relative to the cage unit, i.e. parallel to the orientation of said circumferential members, and adapted to preclude further movement of the wire form around and past the cage unit. The bell assembly is thus held in fixed position with respect to the cage unit. The wire form also serves to act as a spacer to locate the cage unit to which it is attached at a desired distance from the outer shell of the pipe form and at a fixed distance from the pallet of said pipe form.

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**3,837,371**

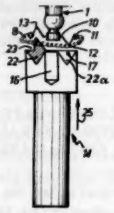
## METHOD OF SHAPING FILAMENT SUPPORTS OF A MINIATURE SIGNAL LAMP

**Jean Rochet, Asnieres, France, assignor to Societe Anonyme dite: Jean Rochet SA France**

**Filed Feb. 27, 1973, Ser. No. 336,248**
**Claims priority, application France, Feb. 29, 1972, 72.06850**
**Int. Cl. B21f *45/00***
**U.S. Cl. 140—71.5** **7 Claims**

A process and an apparatus for manufacturing a miniature signal lamp. The lamp has a base having a longitudinal axis

and radially projecting filament supports that project from the base and lie in substantially a common plane. The end portions of each filament support furthest from the base are connected to the filament. A portion of each filament support is



formed into a V-shaped configuration lying in a plane substantially perpendicular to the common plane wherein alternate ones of said V-shaped portions point in one longitudinal direction and the remaining ones point in the opposite longitudinal direction.

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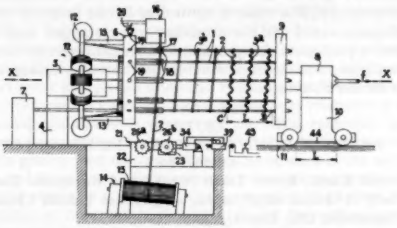
**3,837,372**

## MACHINE AND METHOD FOR PRODUCING AN EXPANSIBLE CYLINDRICAL LATTICE STRUCTURE, IN PARTICULAR FOR A REINFORCEMENT OF A PIPE HAVING A SOCKET

**Jean Bernot, Saint-Dizier, France, assignor to Trefilunion, Paris, France**

**Filed Jan. 24, 1973, Ser. No. 326,357**
**Claims priority, application France, Feb. 3, 1972, 72.03594; Jan. 15, 1973, 73.01242**
**Int. Cl. B21f 27/20**
**U.S. Cl. 140—92.2** **17 Claims**



Method and machine for producing an expansible lattice structure. A transverse filament is wound in the form of coils round a group of longitudinally extending filaments which are parallel to an axis. The winding of the transverse filament is accompanied, toward the end of the winding, by a corrugation of the transverse filament so as to produce at the end of the lattice structure an end portion which can be expanded radially of the axis. The lattice structure is of particular utility as a reinforcement for a concrete pipe having a socket at one end.

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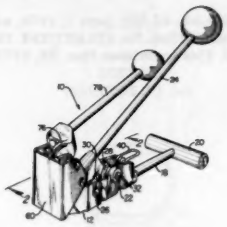
**3,837,373**

## TOOL FOR TENSIONING A CIRCULAR BAND

**Harold H. Beardsley, Denver, Colo., assignor to Band-It Company, Denver, Colo.**

**Filed Dec. 4, 1972, Ser. No. 311,865**
**Int. Cl. B21f 9/02**
**U.S. Cl. 140—93.4** **12 Claims**

Tool for tensioning a circular band having a tangential tail and a buckle connecting lapping portions of the band, characterized by a portable tool having band tensioning means and a pivoted crimping head adapted to form a specific type of crimp in the outer band, the crimping head adapted to be



moved away from an interferring position at which the tool and band may be relatively rotated in the plane of the band to break off the tail adjacent the buckle.

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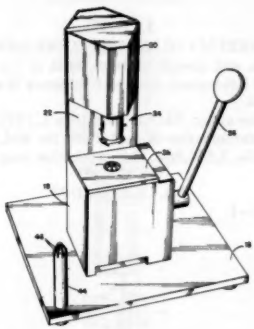
**3,837,374**

## TECHNIQUES FOR FORMING SEMICONDUCTOR LEADS

**Richard E. Plante, 103 Dover St., Somerville, Mass. 02144**

**Filed June 21, 1973, Ser. No. 372,214**
**Int. Cl. B21f 45/00**
**U.S. Cl. 140—105** **21 Claims**



A method and apparatus for forming and trimming the leads of a semiconductor device or the like to simplify subsequent insertion into a receptive socket or holes on a printed circuit board or the like. The technique includes the preliminary spreading apart of the ends of the leads to a configuration in which the ends may be aligned with a specially formed die. The die has a plurality of holes which are receptive to the leads when the leads are placed at the entrance to the holes. The body of the semiconductor device then is gripped firmly and is urged downwardly to force the leads substantially along their axes through the holes. The holes and the die are arranged to progressively bend the leads to their final configuration as the leads are advanced axially through the holes. The lower ends of the leads which extend beyond the other end of the die then are trimmed.

**3,837,375**

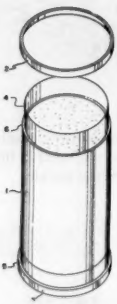
## PROCESS FOR PACKAGING HIGHLY VISCOUS TACKY MATERIALS

**John J. Higgins, and Nova E. Stucker, both of Westfield, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.**

**Division of Ser. No. 42,985, June 3, 1970, which is a continuation-in-part of Ser. No. 676,097, Oct. 18, 1967, Pat. No. 3,545,643. This application Mar. 28, 1972, Ser. No. 238,856**

**Int. Cl. B65b *3/04***

**U.S. Cl. 141—1** **8 Claims**



A process for packaging viscous tacky polymers which comprises hot filling a container with the polymer wherein the container has a liner comprising (1) heat-stabilized nylon coated with a silicone release agent; (2) an uncoated cellophane film; (3) a mineral pigment coated kraft paper overcoated with a silicone release agent; or (4) kraft paper coated with finely divided mica.

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**3,837,376**

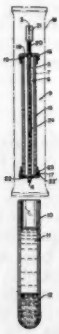
## BLOOD SERUM COLLECTION TUBE AND METHOD

**Paul Brown, and Joseph O'Brien, both of c/o Metropolitan Pathology Laboratory, Inc., 60 Commerce Way, Ridgewood, N.J. 07606**

**Continuation of Ser. No. 148,872, June 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 854,982, Sept. 3, 1969, Pat. No. 3,586,064. This application Aug. 7, 1972, Ser. No. 278,227**

**Int. Cl. B01l *11/00***

**U.S. Cl. 141—1** **4 Claims**



The disclosure relates to an improved apparatus and an improved method for removing serum from the uppermost portions of a specimen tube of centrifuged blood, in which the blood serum is disposed in a liquid pool above settled-out cellular solid materials. More particularly, the invention is directed to an easily handleable, readily mailable, collection tube closed at both ends by "one shot" valve structures comprising self-sealing elastomeric elements pierced by a special one-piece hollow needle. Additionally, the lower elastomeric element includes an annular piston-like member which is adapted to engage the inner walls of the specimen tube to pump serum therefrom.

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**3,837,377**

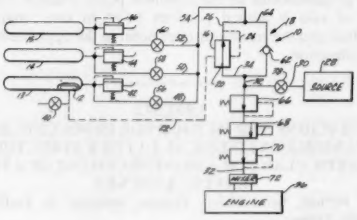
## TEMPERATURE COMPENSATED CHARGING SYSTEM AND PROCESS FOR NATURAL GAS AND THE LIKE

**Robert W. McJones, 529 Via Del Monte, Palos Verdes Estates, Calif. 90274**

**Continuation-in-part of Ser. No. 34,966, May 6, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 295,976**

**Int. Cl. B65b *3/00***

**U.S. Cl. 141—4** **13 Claims**




A valve controls communication between a source of pressurized gas and containers which are to be charged with the gas. The valve in turn, is controlled by the pressure of a gas in a reference vessel which is in thermal communication with the containers to be charged. This reference vessel contains a quantity of gas charged into it at a predetermined temperature and pressure. The valve is controlled by the pressure of the reference vessel and the container to be charged such that when a predetermined pressure differential between the two exists, the valve closes communication between the source of gas the the containers.

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**3,837,378**

## DEVICE FOR THE TRANSPORT AND FILLING OF AMPOULES

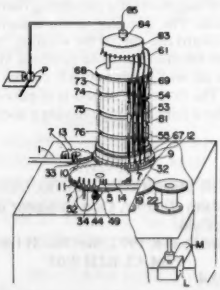
**Hiroshi Kanki, Kobe; Torao Suzuki, and Kazuyoshi Kurita, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan**

**Filed Oct. 6, 1972, Ser. No. 295,573**

**Claims priority, application Japan, Apr. 18, 1972, 47-39384**

**Int. Cl. B65b *3/04***

**U.S. Cl. 141—146** **13 Claims**



A device for the transport and filling of ampoules comprising a rotatory transport plate on the periphery of which is pro-

vided at regular intervals holder grooves into each of which an ampoule can be inserted and held by the suction force of a source of suction applied through passages connecting the suction source and the grooves, and reciprocating constant volume pumps, each provided with support yokes co-axial and co-rotatory with the plate and positioned above each of the grooves, and with an exhaust portion to which are connected filler needles which are successively reciprocated to perform filling operations of ampoules during transport of the ampoules in said grooves.

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**3,837,379**

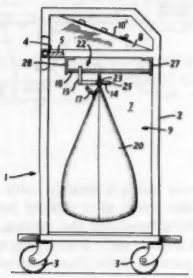
**IRRIGATOR LIQUID SUPPLY SYSTEM**

**Harold Paul McDonald, Jr., Memphis, Tenn., and John Varga, Bayville, N.Y., assignors to East/West Medical Products Inc., New York, N.Y.**

**Filed May 14, 1973, Ser. No. 360,225**

**Int. Cl. B65b** *3/12, 37/06*

**U.S. Cl. 141—232** **10 Claims**



A urological endoscopic irrigation liquid supply system is provided including, in combination, a sterilizer comprising means for sterilizing irrigating liquid and filling the sterile irrigating liquid into a storage reservoir carried on a track, and an irrigator comprising a storage track for the filled storage reservoir, means for supporting a gravity feed reservoir at an elevated position with respect to the filled reservoir, and means for pumping irrigating fluid from the storage reservoir to the gravity feed reservoir. The tracks on each of the sterilizer and irrigator can be interconnected, so as to transfer the storage reservoir containing sterile irrigating fluid from the sterilizer on the track to the irrigator, for connection to the gravity feed reservoir.

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**3,837,380**

**MARINE LOADING/UNLOADING SYSTEM**

**Robert Henry Davies, Anfield, Mill Ln., Herne, England**

**Filed Mar. 24, 1972, Ser. No. 237,755**

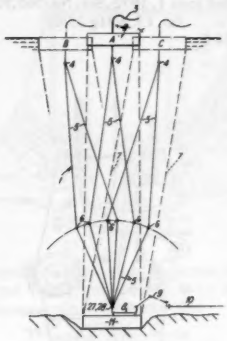
**Claims priority, application Great Britain, Mar. 29, 1971, 8046/71; Nov. 29, 1971, 55374/71; Feb. 2, 1972, 4994/72**

**Int. Cl. B67c** *3/30*

**U.S. Cl. 141—279** **10 Claims**

Marine loading or unloading system for fluids, particularly for tanker loading in deep water, have a sea-bed pipe line joined to a sea-bed anchor to which directly or indirectly a ship for loading or unloading is moored. A conduit proceeds from the sea-bed anchor to the ship and includes rigid pipe lengths joined by pivoting joints of which at least one is a universal joint.

In one embodiment of system shown, the conduit proceeds as a jointed rigid pipe substantially vertically from the anchor to a captive buoy to which the ship is moored and whence the conduit is conventional hose or the like; in another embodiment, the ship is moored direct to the sea bed anchor and the



conduit proceeds as a jointed rigid pipe to a free-floating buoy or capture device. Novel universal joints and swivel bearing constructions for under-water applications are shown, and also a novel variable-buoyancy capture device.

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**3,837,381**

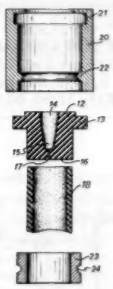
**SHUTTOFF VALVE DEVICE**

**Luis Saenz Arroyo, Mexico City, Mexico, assignor to Products Adex, S.A. Mexico**

**Filed Dec. 26, 1972, Ser. No. 318,442**

**Int. Cl. B65b** *3/04;* **F16k** *21/04*

**U.S. Cl. 141—350** **1 Claim**



A fluid shutoff device is provided for attachment to inflatable fluid containers for domestic and medical uses. The device comprises four cooperating elements - a flexible tubular member extending from the inflatable tubular container; a hollow tubular cover; an elastomeric body inserted into the end of said tubular member and having therein a truncated conical bore communicating with a valve channel; and a ring member which prevents fluid pressure from loosening the engagement of the elastomeric body and the end of said tubular member. Pressure of fluid in said inflatable container automatically compresses said body and maintains said valve channel in closed condition. Fluid is introduced into or discharged from said container by inserting a convention syringe adapter into said truncated conical bore to open the valve channel.

**3,837,382**

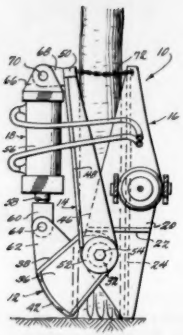
## TREE CUTTING APPARATUS WITH IMPROVED CUTTING AND GRIPPING HEAD ASSEMBLY

**Walden M. Gaitten, Sylacauga, Ala., assignor to Kockum Industries, Inc., Talladega, Ala.**

**Filed June 1, 1973, Ser. No. 365,977**

**Int. Cl. A01g** *23/08*

**U.S. Cl. 144—34 E** **9 Claims**



A tree cutting and gripping head assembly for use in a tree felling apparatus which includes a single movement effecting unit, such as a hydraulic ram, connected both with respect to a tree cutting part and a tree gripping part of the head assembly for effecting movement for both of these parts through their respectively operative strokes in response to a single actuating movement of the unit. The head assembly also embodies a number of improved cutting blade constructions which are particularly useful in splitting the tree stump during cutting operation or otherwise forming pockets in the upper surface of the tree stump for retaining moisture which materially aids in the disintegration of the stump.

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**3,837,383**

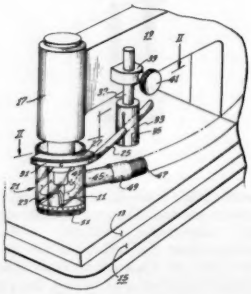
## DUST COLLECTOR AND SAFETY GUARD

**Kenneth Ko, 1976 N. Kenmore Ave., Los Angeles, Calif. 90027**

**Filed Nov. 9, 1972, Ser. No. 305,324**

**Int. Cl. B27g** *21/00*; **B23q** *11/06*

**U.S. Cl. 144—251 A** **13 Claims**



Apparatus for creating a vacuum about a tool for the removal of dust, work chips, etc., generated by contact between the tool and the workpiece. A tubular or cylindrical collecting device is mounted for horizontal and vertical adjustment relative to the tool mounting apparatus and is provided with a tangentially arranged suction apparatus for creating a partial vacuum within the device. In order to allow the operator to follow the contact of the tool with the workpiece visually, in the preferred embodiment the apparatus is manufactured of a transparent material. The device is also a guard to prevent fingers or hands coming in contact with the rotating bit during operation.

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**3,837,384**

## SYSTEM FOR CUTTING SPLINES IN BOARDS

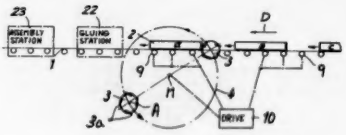
**Hans Sybertz, Hargesheim, Germany, assignor to Hubel & Platzer Maschinen-Baugesellschaft m.b.H., Bad Kreuznach, Germany**

**Filed Mar. 26, 1973, Ser. No. 345,219**

**Claims priority, application Germany, Mar. 29, 1972, 2215308**

**Int. Cl. B27c** *9/04*

**U.S. Cl. 144—326 R** **10 Claims**




A board is moved along a straight path forming a chord through the circular orbit of a milling head. The relative speeds of the orbiting head and the moving plank are varied with respect to each other such that the vector of the orbiting speed of the head parallel to the plank displacement direction, i.e., the velocity component in this direction is always equal to the velocity of the plank while this head is in contact with a plank end. Thus, splines are cut of equal length and depth. The head can simultaneously cut splines in the trailing end of a leading workpiece and the leading end of a trailing workpiece, and then on the return swing cut splines in the trailing end of the trailing workpiece and in the leading end of the following workpiece. Several such heads may be mounted on a single rotatable carrier. After cutting of the splines the planks are coated on their ends with adhesive and pushed together axially so as to splice them together.

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**3,837,385**

## ENVELOPE CLOSURE

**Wilhelm Schelkmann, Crengeldanzstrasse 58, Witten, Germany**

**Filed June 16, 1972, Ser. No. 263,431**

**Int. Cl. B29h** *5/04*

**U.S. Cl. 150—54 B** **15 Claims**

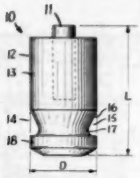
An elastic wrapper encloses at least a portion of a vehicle tire which is to be repaired. Opposite end portions of the wrapper are overlapped once or several times at a distance from the tire which is enclosed in the elastic wrapper, and an annular reinforcing element may be located in the overlap.

3,837,386

## ANTI SKID STUD FOR TIRES

Daniel Lejeune, Clermont Ferrand, France, assignor to Compagnie General des Etablissement Michelin raison Sociale Michelin & Cie

Filed Apr. 23, 1973, Ser. No. 353,545
Claims priority, application France, May 5, 1972, 72.16299
Int. Cl. B60c *11/16*
U.S. Cl. 152—210 4 Claims




An improved anti-skid stud for tires comprises a cylindrical body having a hard point at one end and having one or more intermediate annular grooves.

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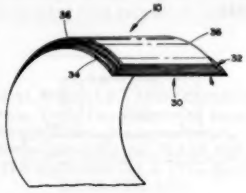
3,837,387

## BREAKER BANDS FOR PNEUMATIC TIRE

Richard M. Menough, and Robert W. Cuddigan, both of Denver, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 110,688, Jan. 28, 1971, Pat. No. 3,751,316. This application Apr. 12, 1973, Ser. No. 350,671
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 R 4 Claims




A breaker band for tires having a plurality of plies of biased cut rubberized tire cord, the cords each bevel cut at the edge of the breaker band to define a breaker band that is substantially uniform trapezoidal cross-section.

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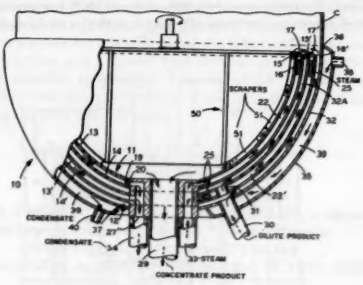
3,837,388

## EVAPORATOR APPARATUS

Thomas Margittai, 778 Cornwall Drive, State College, Pa. 16801

Filed Dec. 21, 1972, Ser. No. 317,423
Int. Cl. B01d *1/22, 1/00*
U.S. Cl. 159—13 R 8 Claims

An evaporator apparatus of the thin film type having a structure and a mode of operation such that the amount of liquid to be concentrated in the evaporator is minimal, as compared to the total evaporating capacity of the apparatus; such evaporator comprising a plurality of spaced, nesting cup shaped heat transfer members to provide cup shaped spaces therebetween for (1) admitting a heating medium to the space therebetween; (2) passing liquid to be concentrated upwardly over heated, rapidly increasing surface areas; and (3) passing the concentrated liquid downwardly over heated, rapidly decreasing surface areas to a product outlet.

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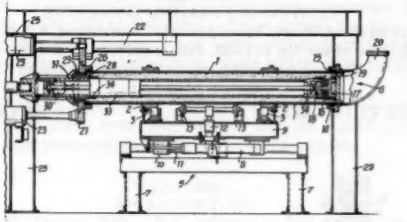
3,837,389

## METHOD OF AND APPARATUS FOR FORMING A SAND MOULD FOR USE IN THE MANUFACTURE OF A CAST IRON PIPE

Duncan Whyte Provan, Shrewsbury, England, assignor to Glynwed Foundries Limited, Bilston, Staffordshire, England

Filed Feb. 6, 1973, Ser. No. 330,013
Claims priority, application Great Britain, Feb. 14, 1972, 006710/72
Int. Cl. B22c *13/10*
U.S. Cl. 164—33 9 Claims



Forming a sand mould prior to centrifugally casting a cast iron pipe by locating a mould containing flask against a sand blow head, bringing a plate against the other end of the flask and passing a mandrel having an oversized head through the plate and locating one end of the mandrel against the blow head, blowing sand into the annulus so formed between the mandrel and flask, compacting the sand at each end of the flask and compacting the remainder of the sand by withdrawing the mandrel from the flask so that the head of the mandrel effects the compacting.

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3,837,390

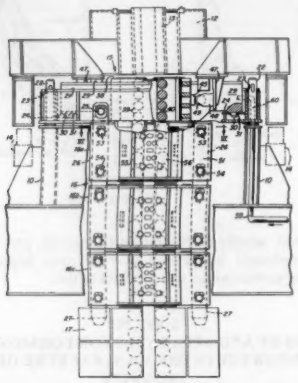
## CONTINUOUS CASTING MACHINE EMBODYING A SELF-ALIGNING AND FLEXING GUIDE-ROLL RACK

Charles H. Bode, Jr., Upper St. Clair Twp., Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 143,077, May 13, 1971, Pat. No. 3,700,073. This application Aug. 1, 1972, Ser. No. 277,709
Int. Cl. B22d *11/12*
U.S. Cl. 164—260 8 Claims

A guide-roll rack for use in a continuous-casting machine. The rack is formed of a short-length upper section and a

longer lower section which is made up of individual subsections. Both the upper and lower sections are supported on a frame which rests on the supporting structure of the machine. The rack is stationary vertically but can shift horizontally to a limited extent to facilitate aligning it with the mold and its sec-



tions and subsections with one another. The mold-support frame oscillates vertically, but carries rollers which ride against the upper section of the rack for aligning the rack with the mold. The sections and subsections are flexibly connected to assure proper alignment.

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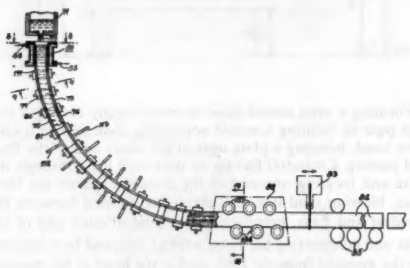
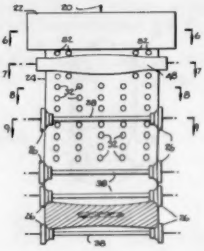
**3,837,391**
**CONTINUOUS CASTING APPARATUS**
**Irving Rossi, Dunros Farm, James St., Morristown, N.J. 07960**
**Division of Ser. No. 111,488, Feb. 1, 1971, Pat. No. 3,766,982. This application Feb. 26, 1973, Ser. No. 335,600**
**Int. Cl. B22d *11/12***
**U.S. Cl. 164—282** **10 Claims**



Apparatus for continuously casting steel into a wide-faced continuous slab is disclosed wherein the oppositely disposed wide faces of the outer shell of the cast slab are concavely arched to resist outward bulging due to the ferrostatic head of the molten core. The cast strip is passed between spaced pairs of guide rollers which bear against only the opposite edges of the strip and also buttress the strip against the internal ferrostatic head of the molten core. Therefore, the necessity of guide rollers that bear against the wide surfaces of the strip is eliminated, allowing uniform application of coolant liquid to the wide surfaces, thus greatly enhancing the rate of solidification of the strip.

**3,837,392**
**APPARATUS FOR CONTINUOUSLY CASTING STEEL SLABS**
**Irving Rossi, Dunros Farm, James St., Morristown, N.J. 07960**
**Division of Ser. No. 199,988, Nov. 18, 1971, Pat. No. 3,773,099. This application Apr. 11, 1973, Ser. No. 350,017**
**Int. Cl. B22d *11/12***
**U.S. Cl. 164—282** **2 Claims**



Surfaces are reinforced against loads applied to one side by subjecting the opposite side to intense and continuous cooling to establish thermal stresses. This technique is applied in the continuous casting of slabs and billets by giving the slab and billet an initial concavity or at least restraining same from initial convexity and then subjecting its outer surface to the action of continuous and intense coolant sprays.

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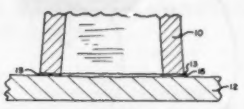
**3,837,393**
**METHOD AND MEANS FOR SEALING INGOT CASTING MOLDS TO STOOLS**
**Albert L. McQuillen, Jr., Pittsburgh, Pa., assignor to 33 Hundred, Inc., Pittsburgh, Pa.**
**Filed May 16, 1973, Ser. No. 360,982**
**Int. Cl. B22d *33/04***
**U.S. Cl. 164—342** **10 Claims**



The joint or space between the open bottom mold and the supporting stool used for casting steel ingots is sealed by applying a sealing means which firmly adheres to the mold body and the stool magnetically.

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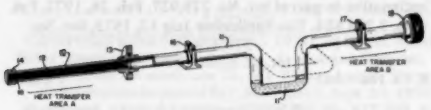
**3,837,394**
**THERMAL TRANSFER APPARATUS PROVIDING TRANSFER CONTROL**
**Charles Chester Roberts, Jr., Carol Stream, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**
**Filed Nov. 9, 1973, Ser. No. 414,506**
**Int. Cl. F28d *15/00***
**U.S. Cl. 165—32** **5 Claims**

Heat pipe apparatus comprising a heat pipe having a first section having spiral fins extruded on its inner surface and a second section having a smooth bore interior. The pipe is sealed at each end after evacuation of all noncondensable gases and contains a vaporizable liquid as the medium for heat transfer. The second section of the pipe has a U-shaped por-

tion which, when liquid filled, acts as a vapor or liquid trap when suspended vertically to prevent heat transfer in either direction. Since no capillary return of condensate is possible



through the smooth bore section of the pipe when the trap is in an open position, unilateral heat transfer toward either end of the pipe is made possible.

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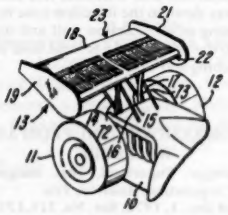
**3,837,395**

## WING SURFACE COOLER

**Anson S. Coolidge, Centerville, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio**

**Filed Sept. 13, 1973, Ser. No. 396,702**
**Int. Cl. F24h** *3/00*
**U.S. Cl. 165—47** **5 Claims**



A vehicular wing structure which performs a usual functional purpose and which in addition incorporates surface cooler means carrying out a cooling function in conjunction with engine oil or other fluid excessively heated in operation of the vehicle.

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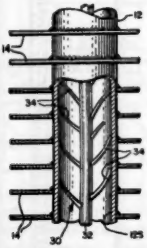
**3,837,396**

## VERTICAL SURFACE VAPOR CONDENSERS

**Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.**

**Continuation-in-part of Ser. No. 71,539, Sept. 11, 1970, abandoned. This application Oct. 4, 1972, Ser. No. 295,086**
**Int. Cl. F28b** *9/08*
**U.S. Cl. 165—111** **1 Claim**



Improvements in vertical tube or column type surface vapor condensers are disclosed comprising means positioned within the tubes engaging the inner tube walls for guiding condensate away from that primary condensing surface to remove condensate from the condensing surfaces to improve heat transfer. Three types of guide means are disclosed, a tree-like structure having a central trunk and a plurality of up-reaching and spreading wire branches which contact the tube interior wall and remove condensate capillary action as well as gravity; a second tree-like unit having U-shaped double branch contacters extending for a length along the tube wall for increased capillary action and a funnel type that includes a plurality of opening upward split-walled funnels which are affixed at spaced intervals along a central rod and have their outer edges engaging the tube interior walls.

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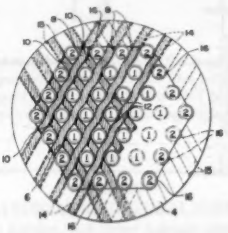
**3,837,397**

## TUBE BUNDLE ASSEMBLY

**Michel J. Pettigrew, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ontario, Canada**

**Filed Feb. 14, 1972, Ser. No. 226,161**
**Claims priority, application Canada, Mar. 19, 1971, 108225**
**Int. Cl. F28d** *7/00*
**U.S. Cl. 165—162** **9 Claims**



A tube bundle assembly, for example, a heat exchanger tube bundle or a nuclear fuel element tube bundle, comprises a bundle of laterally spaced tubes, a frame around the outermost tubes, and a lattice of wire cables with their ends held against lateral displacement by the frame and the tubes in the lattice interstices.

The cables are deflected round a portion of each tube to space the tubes from one another, and the cables are preferably tensioned against the frame for this purpose.

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**3,837,398**

## KICKOVER TOOL

**John H. Yonker, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.**

**Filed July 30, 1973, Ser. No. 384,103**
**Int. Cl. E21b** *7/06*
**U.S. Cl. 166—117.5** **5 Claims**

This patent discloses a kickover tool for landing or pulling tools such as gas lift valves from side pocket mandrels in which

control of movement of the tool carrier from a running to a landing or pulling position is provided by a dog mandrel which engages a single shoulder within the tubing and is movable between multiple positions to provide the necessary control.

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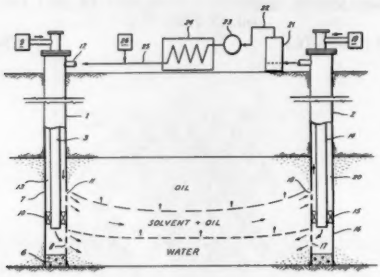
**3,837,399**

## COMBINED MULTIPLE SOLVENT MISCIBLE FLOODING WATER INJECTION TECHNIQUE FOR USE IN PETROLEUM FORMATIONS

**Joseph C. Allen, Bellaire; Jack F. Tate, and Jack H. Park, both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.**

**Filed May 4, 1973, Ser. No. 357,412**
**Int. Cl. E21b *43/20***
**U.S. Cl. 166—266** **19 Claims**




A petroleum recovery method employing a mixed solvent for use in subterranean petroleum-containing formations. The mixed solvent density is less than the density of water and greater than the density of the formation petroleum, and preferably has a boiling point less than the boiling point of the formation petroleum. Water is injected into the bottom of the petroleum formation and solvent is injected into the formation above the depth at which water is injected, and a mixture comprising solvent and petroleum is recovered from production wells. The solvent may be separated from the produced petroleum-solvent mixture by distillation and recondensation for reinjection into the formation. The rate of water injection is controlled to force the horizontally moving solvent bank slowly upward so as to sweep the entire formation.

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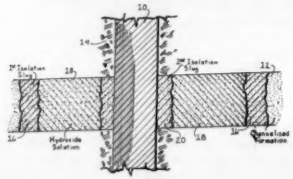
**3,837,400**

## SELECTIVE PLUGGING PROCESS

**Waylan C. Martin, P.O. Box 1468, Monahans, Tex. 79756**

**Filed Dec. 15, 1972, Ser. No. 315,655**
**Int. Cl. E21b *33/138, 43/22***
**U.S. Cl. 166—274** **4 Claims**



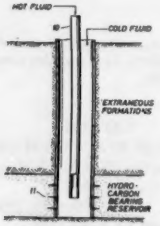
Channels in a water flood oil zone are plugged by injection of a hydroxide solution such as sodium hydroxide. The hydroxide solution is isolated from the magnesium bearing connate water in the vicinity of the wellbore by an isolating slug of low magnesium water.

**3,837,401**

## HOT FLUID INJECTION INTO HYDROCARBON RESERVOIRS

**Joseph C. Allen, and Yick-Mow Shum, both c/o Texaco, Inc., P.O. Box 425, Houston, Tex. 77401**

**Continuation-in-part of Ser. No. 229,927, Feb. 28, 1972, Pat. No. 3,774,684. This application July 12, 1973, Ser. No. 378,474**
**Int. Cl. E21b *43/24***
**U.S. Cl. 166—303** **7 Claims**




Hot hydrocarbon solvent may be injected into a subterranean hydrocarbon reservoir with little heat loss through the casing walls on the way down to the injection zone by placing tubing inside the casing of an injection well and injecting a hot fluid or vapor into the tubing and a solvent fluid into the annulus between the tubing and casing.

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**3,837,402**

## PROCESS FOR REMOVING OIL FROM AROUND A WELLBORE

**Carl Wayne Stringer, Sugarland, Tex., assignor to Radon Development Corporation, Houston, Tex.**

**Filed Dec. 1, 1972, Ser. No. 311,131**
**Int. Cl. E21b *43/22, 43/24***
**U.S. Cl. 166—303** **4 Claims**

Chemical combination of 1] the reaction of fatty acid with diethanolamine, and 2] ingredient to enhance such reactant's solubility in water, the combination then, on dilution being used to transfer, suspend or remove petroleum or its products.

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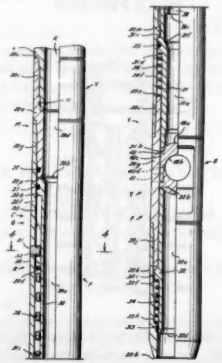
**3,837,403**

## ALTERNATING VALVE METHOD AND APPARATUS

**James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.**

**Filed Jan. 3, 1972, Ser. No. 215,030**
**Int. Cl. E21b *43/12***
**U.S. Cl. 166—315** **30 Claims**



An alternating valve well tool and method relating thereto having a ball-type closure member which is rotatable between

open and closed positions in response to the urging of a controlled sequence of preselected fluid pressure changes in the well for shutting in the well at a subsurface location when desired.

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**3,837,404**

## COMPOSITIONS FOR BINDING DUST IN COAL MINES

**Heinz Buggisch, Saarbrucker Str. 5, Cologne-Ostheim, and Hans Lewer, Waldstrasse 32, 581 Witten-Annen, Germany**

**Continuation-in-part of Ser. No. 74,842, Sept. 23, 1970, abandoned, which is a continuation of Ser. No. 817,298, April 17, 1969, abandoned, which is a continuation of Ser. No. 581,681, Sept. 26, 1966, abandoned. This application May 11, 1973, Ser. No. 359,385**

**Claims priority, application Germany, Sept. 28, 1965, 36992**

**Int. Cl. A62c** *3/00*

**U.S. Cl. 169—45** **13 Claims**

The present invention relates to a composition for binding dust in coal mines comprising calcium chloride to compositions suitable for binding such coal dust and an improved method of binding coal dust in coal mines.

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**3,837,405**

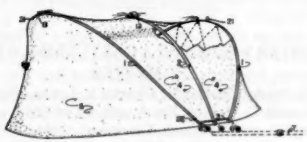
## FIRE PROTECTION SYSTEM FOR ARCH SUPPORTED MEMBRANE STRUCTURES

**Carl Frederick Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co., Pleasant Ridge, Mich.**

**Filed May 11, 1973, Ser. No. 359,549**

**Int. Cl. A62c** *35/00*

**U.S. Cl. 169—56** **11 Claims**



A fire protection system for an arch supported membrane structure comprising a plurality of hollow arches containing a cooling medium. The arches can be made water tight so that they can serve as water mains to supply a sprinkler or deluge system above or below the roof membrane.

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**3,837,406**

## SPRINKLER HEAD CLOSURE

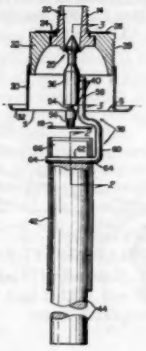
**Robert J. Straley, and Victor C. Muller, both of Monrovia, Calif., assignors to Fire Sprinkler Control Company, Monrovia, Calif.**

**Filed July 27, 1972, Ser. No. 275,809**

**Int. Cl. A62c** *13/00*

**U.S. Cl. 169—90** **8 Claims**

Apparatus and method for shutting off water flow through the nozzle outlet of a ceiling sprinkler lead, particularly of the flush type, in which lateral access to the space between the outlet and a spreader disposed therebelow is obstructed and the only access to such space is across a circular cross section disposed between the outlet and spreader, characterized by a gooseneck member having a nozzle closure affixed to the upper end thereof, its lower end being affixed to a handle adapted to be removably attached to a pole, the gooseneck being so shaped to permit the closure and gooseneck to be inserted across said space without interference with the sprinkler head, an intermediate portion of the gooseneck adapted to clear the periphery of the spreader when the nozzle closure is disposed in axial alignment with the nozzle outlet.



The spreader may be supported by the head by a rigid yoke or flexibly supported by chains or the like but regardless of its manner of support an abutment is provided for preventing the closure from moving away from sealing engagement with the nozzle.

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**3,837,407**

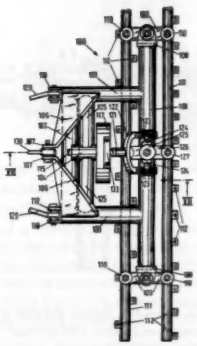
## OSCILLATING AGRICULTURAL IMPLEMENT

**Cornelis Jan de Koning, and Pieter Adriaan Oosterling, both of Nieuw-Vennep, Netherlands, assignors to H. Vissers N.V., Nieuw-Vennep, Netherlands**

**Filed Feb. 4, 1972, Ser. No. 223,644**

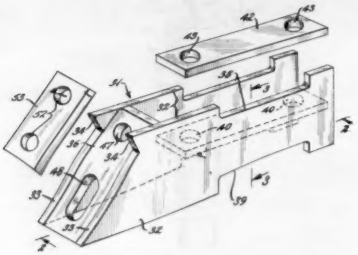
**Int. Cl. A01b** *35/00*

**U.S. Cl. 172—40** **8 Claims**



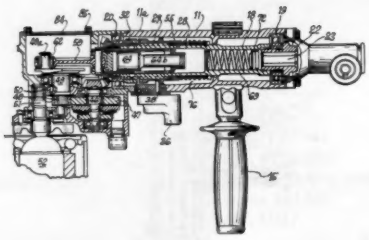
Improvement of an agricultural implement, e.g., fertilizer spreader or harrow, at least comprising a frame to be attached to a vehicle, e.g., agricultural tractor, at least one tool, e.g., spreading nozzle or harrow beam, carried by the frame and oscillatingly moving with respect to the frame, and a driving element rotating about an axis of rotation and driving the tool via a fork, wherein a stalk of the fork is beared rotatably in the driving element outside the axis of rotation and wherein teeth of the fork are beared hingeably about a hinge axis to the tool. For facilitating, assembling and dismantling of the fork in the driving element the fork is beared in a bearing bush removably attached to the driving element and the driving element comprises a recess for letting through the stalk of the fork with removed bearing bush, said fork hinging about the hinge axis.

3,837,408
TOOL BAR MOUNTING CLAMP
Edgar E. Green, Shelbyville, Tex., assignor to Paul Abbott Co., Inc., Blytheville, Ark.
Continuation of Ser. No. 114,653, Feb. 11, 1971, abandoned.
This application May 22, 1973, Ser. No. 362,723
Int. Cl. A01b 15/00
U.S. Cl. 172—702 6 Claims



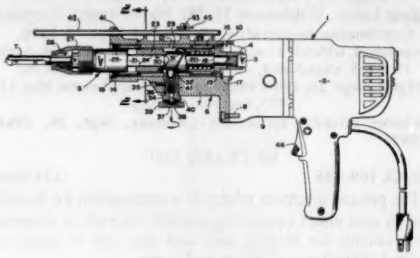
Apparatus adjustably and reversibly mounted on a frame carried by a propelling vehicle and adapted to support a tool bar in a plurality of vertically spaced positions to accommodate a wide variety of implements with minimum movement of the frame.

3,837,409
ROTARY HAMMER POWER TOOL
Frank J. Consoli, Des Plaines; Peter G. Rebechini, Aurora, and Hanspeter E. Beisch, Buffalo Grove, all of Ill., assignors to Skil Corporation, Chicago, Ill.
Filed Feb. 26, 1973, Ser. No. 335,933
Int. Cl. B25d 11/00
U.S. Cl. 173—48 3 Claims



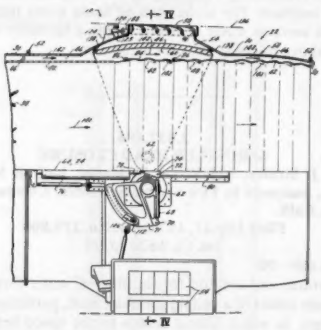
A gear type drive train from the motor rotates a barrel, the latter having a drive formation in one end thereof configured to impart rotation to the shank of a tool element received therein. The gear train reciprocates a cylinder simultaneously with rotation of the barrel, which cylinder is reciprocally mounted within the barrel. A hammer is freely mounted within the cylinder and is pneumatically reciprocated for imparting hammering blows to a tappet mounted in the barrel between the hammer and the distal end of the tool element thereby in turn to impart hammering blows to the latter. A spring biases the tappet against the tool shank thereby to prevent flutter of the former. The rotary drive to the barrel may be selectively disconnected by a manually operated mechanism. A wall of the tool housing cooperates with the barrel to define an annular chamber for receiving a supply of grease; apertures are provided in the barrel and in the sleeve thereby permitting the grease to enter the barrel as well as the sleeve for lubricating the latter and the hammer.

3,837,410
ROTARY IMPACT DRILL
Richard D. Maxwell, 26800 Lake Rd., Bay Village, Ohio 44140
Filed May 23, 1973, Ser. No. 362,944
Int. Cl. B25d 9/00
U.S. Cl. 173—109 2 Claims



A rotary impact drill includes spaced-apart front and rear bearings in which a hammer is rotatably and axially reciprocably supported for working against an anvil which is also supported in the same front bearing as the hammer. A coupling member is secured to the rear end of the shaft portion of the anvil for coupling to a power-driven drive shaft, and such coupling member also secures an axial thrust bearing to such shaft portion, with such thrust bearing being located between the rear bearing and a retainer. A spring is compressed between the hammer and the thrust bearing for normally biasing the hammer toward the anvil. A cam on the drill cooperates with a cam follower on the housing for reciprocating the hammer toward and away from the anvil in cooperation with the spring.

3,837,411
DIVERTER VALVE FOR A GAS TURBINE WITH AN AUGMENTER
Dudley O. Nash, Cincinnati; Charles S. Lyons, West Chester, and Ronald C. Hollett, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Nov. 21, 1973, Ser. No. 417,954
Int. Cl. B64c 15/06
U.S. Cl. 137—610 11 Claims



A gas turbine having an augmenter has an exhaust duct and a cooling liner fixed interiorly of the exhaust duct to define an annular space, with portions of both the duct wall and liner wall removed to form openings. A pair of blocker doors are mounted to the duct wall for rotation between a stowed posi-

tion and an operative position. When the blocker doors are in their stowed position, they replace the removed portions of the duct wall, and an axially translatable liner section replaces the removed portion of the liner wall. When the blocker doors are rotated to their operative position, the liner section is simultaneously translated into telescoping relation with the liner to expose the opening in the liner wall.

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**3,837,412**

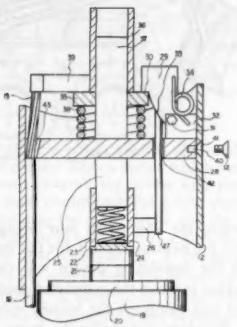
**DOWNHOLE ELECTRICAL CORE DRILLING SYSTEM**

**W. B. Driver, 19 Sheridan Rd., Arnold, Md. 21012**

**Filed Dec. 6, 1972, Ser. No. 312,629**

**Int. Cl. E21b** *3/10, 9/20, 25/00*

**U.S. Cl. 175—104** **7 Claims**



According to the invention a downhole electrical core drilling system that is lowered into a well hole by an electrical cable to drill a core sample or to drill a well hole. The system consists of a core bit, core barrel and a reduction transmission powered by an electric motor, which is attached to the downhole end of a drill collar, which has its up hole end attached to the electrical cable, which is used to raise and lower the system in a well hole and provide electrical power to the system. The core barrel contains a mechanism, which when activated by a drilled core, cuts the drilled core from the formation from which it was drilled, and holds the drilled core in the core barrel while the system is hoisted to the top of a well hole.

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**3,837,413**

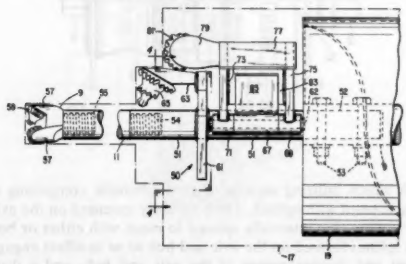
**BORING METHOD AND IMPROVED BORING HEAD**

**Richard P. Dunn, Wichita Falls, Tex., assignor to International Boring Systems Co., Inc., Wichita Falls, Tex.**

**Filed July 18, 1973, Ser. No. 380,409**

**Int. Cl. E21b** *9/28, 9/32*

**U.S. Cl. 175—292** **6 Claims**



A horizontal boring method comprises the steps of boring a small diameter pilot hole, thereafter removing the small diameter bit, then boring the final diameter of the bore hole by advancing a boring bit having a lead-off bar guided within and by said pilot hole, simultaneously advancing a cylindrical casing immediately behind said bit, introducing a liquid into the end of the casing to slurry the cuttings and finally, when the boring step is completed, removing the bit through the casing and cleaning the thus installed casing.

A roller bit is provided which is comprised of a pilot bit mounted on a lead-off bar which is attached to the final boring bit having roller overcutters which are retractable to permit removal of the assembly back through the casing when the casing has been completely installed.

The method and apparatus has particular utility in horizontal boring such as when installing drain pipe, utility mains, etc., under pre-exisiting paved areas and the like.

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**3,837,414**

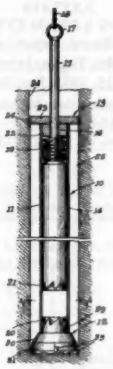
**JAR-TYPE DRILLING TOOL**

**Kenneth C. Swindle, 8716 Burton St., Bellflower, Calif. 90706**

**Filed Aug. 1, 1973, Ser. No. 384,727**

**Int. Cl. E21b** *5/00*

**U.S. Cl. 175—299** **5 Claims**



A drilling tool that, by means of repeated jarring or percussive forces produced by a cable-hung weight, causes a tool bit to chip away at the bottom of a hole. The bit is affixed to the lower end of a tubular casing in which the weight moves, a reamer being affixed to the upper end of said casing to smooth the wall of the hole that is produced by the tool. The force of the weight may be increased by an expansion spring between the weight and a top fitting closing said casing, said fitting and reamer being fixedly connected.

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**3,837,415**

**BULK WEIGHT SERVO CONTROL FOR PACKAGING MACHINES**

**Robert H. Connors, Chicago, and King L. Klopfenstein, Prospect Heights, both of Ill., assignors to Triangle Package Machinery Company, Chicago, Ill.**

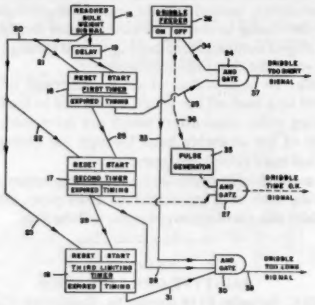
**Filed June 18, 1973, Ser. No. 370,701**

**Int. Cl. G01g** *13/02*

**U.S. Cl. 177—123** **16 Claims**

A bulk weight servo control for automatically adjusting the bulk weight setting in the net weighing system of a packaging machine is disclosed, wherein corrective adjustment of an improper or erroneous bulk weight setting is made, in response to a detecting means which detects the fact that the bulk weight setting is in error. The detecting means may take any

one of several forms. Preferably, the corrective adjustment may be made in response to the duration of the dribble feed,



although it may also be made in response to a check weighing operation or to the time it takes to reach the bulk weight setting.

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**3,837,416**

**BALANCE USING A BEAM TYPE LOAD CELL**

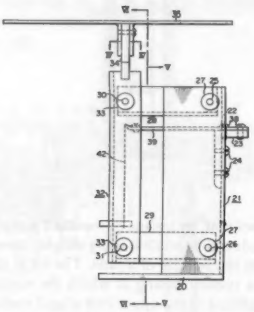
**Yoshiyuki Nozaki, Ichikawa, Japan, assignor to Mitsubishi Seiko Kabushiki Kaisha, Tokyo, Japan**

**Filed May 25, 1973, Ser. No. 363,822**

**Claims priority, application Japan, July 14, 1972, 47-69938; July 14, 1972, 47-82505**

**Int. Cl. G01g** *23/32*

**U.S. Cl. 177—196** **6 Claims**



In a balance using a beam type load cell a load to be weighed is applied to the knife edge of the load cell through the wires which are each fixedly secured at one end to the load cell inwardly of and near the knife edge so that their main portions hang below the knife edge and extend across it.

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**3,837,417**

**CONTROL MEANS FOR FLUID TRANSLATING DEVICE**

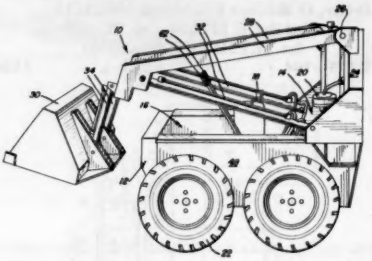
**William E. Little, Mediapolis, Iowa, assignor to J. T, Case Company, Racine, Wis.**

**Filed Jan. 23, 1973, Ser. No. 326,032**

**Int. Cl. B62d** *11/04*

**U.S. Cl. 180—6.48** **1 Claim**

The present invention relates to a control means for actuating a fluid translating device in opposite directions from a neutral position and automatically returning the translating device to the neutral position when the actuating force is released. The control means includes a control lever connected to the translating device through linkage means which incorporates a rigid link having two spaced fixed restraining means. A pair of spaced abutments are carried by the link between the restraining means and are axially movable on the link. A pair of fixed stops are positioned at axially spaced locations adjacent the link with biasing means between the abut-



ments for urging the abutments into engagement with the stops to define the neutral position for the translating device. Actuation of the translating device will cause one of the restraining means to move the associated abutment away from the fixed stop and compress the biasing means. The biasing means will therefore automatically move the translating device to the neutral position when the actuating force is released.

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**3,837,418**

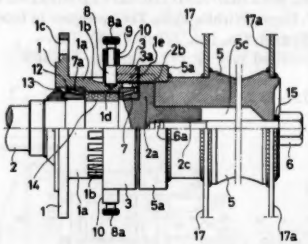
**WINCH UTILIZING AN AXLE OF AN AUTOMOBILE**

**Yasukazu Kawashiro, Ichikawa, Chiba Prefecture, Japan, assignor to Denki Kogyo Company Limited, Tokyo, Japan**

**Filed Aug. 7, 1972, Ser. No. 278,403**

**Int. Cl. B60k** *25/08*

**U.S. Cl. 180—53 WA** **3 Claims**

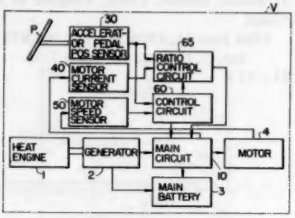


A winch utilizing an axle of an automobile comprising an axle formed with splines, a hub securely mounted on the axle, a coupling ring internally splined to mesh with either or both the splines formed on the axle and hub so as to effect engagement and disengagement of the axle and hub, and a drum formed with internal splines adapted to engage with the splines of said axle so as to engage with or disengage from said axle.

### 3,837,419
### HYBRID ELECTRIC POWER VEHICLE

Kazumasa Nakamura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed May 9, 1973, Ser. No. 358,512
Claims priority, application Japan, May 16, 1972, 47-47728
Int. Cl. B60l *11/12*
U.S. Cl. 180—65 R 12 Claims




In the hybrid electric power vehicle disclosed, a generator driven by a heat engine turns a motor which moves the vehicle. A main circuit controls the motor with power from the generator. The main circuit includes a first thyristor or relay contact for connecting the main circuit and the battery in series with each other or in parallel with each other and a commutation circuit that operates as a chopper. A second thyristor provides the energy from the generator to the motor in the form of pulses. A switch-over circuit opens the relay contact on the basis of the relationship between the degree to which the accelerator pedal is depressed and the motor speed so as to connect the main battery and the generator in series. An output ratio control circuit turns the two thyristors on so that the generator and main battery outputs are supplied to the motor together. The output of the battery is varied by the first thyristor in response to the degree to which the accelerator pedal is depressed.

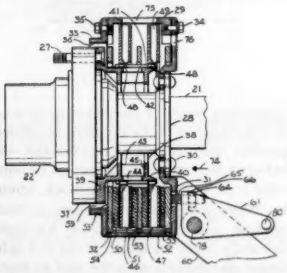
### ERRATUM

For Class 181—131 see:
Patent No. 3,837,681

### 3,837,420
### VEHICLE DISK BRAKE

Jack R. Kobelt, 235 E. 5th Ave., Vancouver 10, B.C., Canada

Filed Mar. 22, 1973, Ser. No. 343,782
Int. Cl. F16d *65/84*
U.S. Cl. 188—71.6 2 Claims

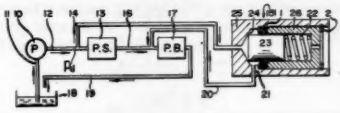


This invention relates to novel improvements in a vehicle disk brake. A hub is rotatably mounted with respect to an axel. A brake disk guide is secured to the hub and a brake shoe guide is secured to the axel. At least one disk is slidably mounted on the disk guide and a plurality of brake shoes are slidably mounted in the brake shoe guide. Mounted external to the disk-shoe assembly is an actuation system of levers and linear actuators. The disk is ventilated and the disk guide is finned to provide a fan action to enhance heat dissipation. The brake shoes are split to permit replacement without removing the hub portion from the axel portion, and shaped to enhance air circulation in the disk brake assembly.

### 3,837,421
### PRESSURE PRIORITY VALVE FOR A POWER STEERING AND BRAKE SYSTEM

Benjamin Ron, 10 Sanhedrin St., Tel Aviv, Israel

Filed Dec. 2, 1971, Ser. No. 204,286
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 R 8 Claims

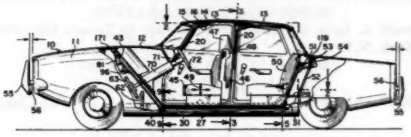



A hydraulic circuit comprising a power steering and a power brake, both being hydraulically connected in series to a primary pump, and a pressure priority valve for reducing the relief pressure across the power steering gear in order to prevent the back pressure imposed on the primary pump from exceeding a certain maximum pressure.

### 3,837,422
### SAFETY VEHICLE

Samuel L. Schlanger, 2600 N. Flagler Dr., Apt. 907, West Palm Beach, Fla.

Filed Nov. 13, 1972, Ser. No. 306,268
Int. Cl. B62d *39/00*
U.S. Cl. 180—91 21 Claims



A safety vehicle for passengers, including a vehicle body, a passenger compartment movable on the vehicle body, and pivotable safety nets mounted on the ceiling of the passenger compartment for disposal in front of the passengers in the vehicle in response to the impact of a collision. A pair of elongated, linearly perforated tracks are mounted on the vehicle body, and receive at least one pair of sprocket wheels, rotatably mounted at the rearward end of the passenger compartment. The sprocket wheels engage the perforated tracks and guide the passenger compartment therealong. Guide wheels are rotatably mounted on the front end of the passenger compartment and are disposed in upwardly inclined guide tracks mounted on the vehicle body in front of the passenger compartment. Slidable bumpers engaged during a collision activate a mechanical linkage which releases the passenger compartment so that it is movable on the guide tracks, collapses the steering column of the passenger compartment, and deploying safety nets, inflatable bags, or a combination of both, in front of the passengers of the vehicle to prevent injury to them. The vehicle also includes a safety front passanger seat

having a crash barrier which is rigidly affixed to the passenger compartment, and a mechanical linkage for applying the brakes of the vehicle automatically at impact. The movable passenger compartment maintains the momentum of the passengers riding therein until obstructions in the passenger compartment have been removed and safety restraining devices have been activated.

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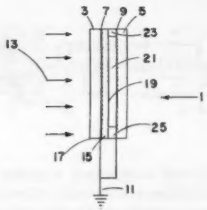
**3,837,423**

**ACOUSTIC EXCITED LIQUID CRYSTAL IMAGE DETECTOR SYSTEM**

**Hugh Mailer, Columbus, Ohio, assignor to The Ohio State University Research Foundation, Columbus, Ohio**

**Filed Oct. 29, 1970, Ser. No. 85,159**
**Int. Cl. G02f 1/34; G01n 21/00**
**U.S. Cl. 181—5 AP** **7 Claims**




An image detector system for patterned acoustic energy is set forth based upon a liquid crystal cell including a sandwiched layer of nematic liquid crystal material. Sound transducing means at said cell transduce said acoustic energy into corresponding electric field variations across said crystal layer, to effect a light scattering pattern in accordance with the sound pattern.

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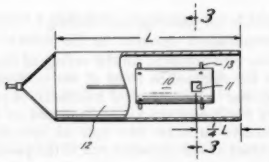
**3,837,424**

**HIGHLY PENETRATING SEISMIC ENERGY SOUND GENERATOR WITH PULSE SHAPING FOR OFFSHORE SUBSURFACE EXPLORATION**

**Oswald A. Itria, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.**

**Filed Jan. 26, 1972, Ser. No. 220,941**
**Int. Cl. G01v 1/38**
**U.S. Cl. 181—0.5 H** **13 Claims**




A method of increasing the useful seismic energy in a generated primary pulse and at least one article for carrying out the method is disclosed. The article comprises a pneumatic sound generator, as an air gun for generating a primary seismic pulse and an openended elongated cylinder surrounding the air gun and having an end opening are nearest the air gun exhaust ports greater than the area of said ports for shaping the primary pulse so that its dominate frequency will be lowered, placing more of the energy in the useful seismic frequency range, resulting in greater penetration of the seismic signal within the sedimentary section.

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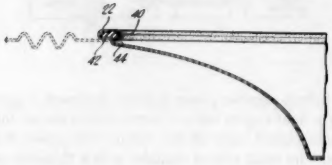
**3,837,425**

**EDGE-DAMPED DIAPHRAGM FOR ELECTRODYNAMIC LOUDSPEAKERS**

**Rudolph T. Bozak, Darien, Conn., assignor to Bozak, Inc., Darien, Conn.**

**Filed June 11, 1973, Ser. No. 368,977**
**Int. Cl. G10k 13/00; H04r 7/00**
**U.S. Cl. 181—32 R** **5 Claims**




A diaphragm having a damping member formed of soft rubber compressed and retained at its outer periphery by a crimped flange to damp undesirable vibrations in the diaphragm.

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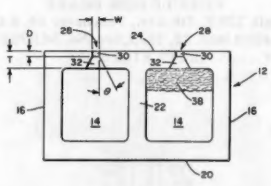
**3,837,426**

**SOUND ABSORBING STRUCTURAL BLOCK**

**Klaus Kleinschmidt, Lexington, Mass., assignor to Miguel C. Junger, Belmont, Mass.**

**Filed Jan. 4, 1974, Ser. No. 430,765**
**Int. Cl. E04b 1/84**
**U.S. Cl. 181—33 G** **9 Claims**




A sound absorbing block of molded structural material has a cavity that communicates with a region containing the sound to be suppressed through an elongated slot whose width decreases between the cavity and a section of constant width adjacent to the exterior surface of the block. Sound energy is dissipated by the air turbulence in the slot, particularly at the narrowest section, and within the cavity by multiple reflections. The inwardly flared structure of the slot achieves a significant increase in absorption in the mid to high frequency range as compared to conventional constant-width apertures having the same width, while being easier to manufacture and having fewer molding rejects than slots having an outwardly flared configuration.

**3,837,427**

## BUILDERS' STAGING

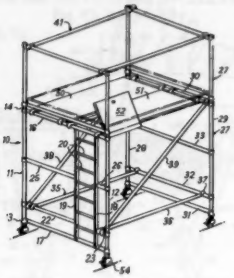
**Frederick Mattinson, Andover, England, assignor to Martin-Thomas, Ltd., Andover, England**

**Filed May 4, 1973, Ser. No. 357,103**

**Claims priority, application Great Britain, May 12, 1972, 22518/72**

**Int. Cl. E04g 1/14**

**U.S. Cl. 182—115** **5 Claims**



The invention provides a frame type staging for builders having at least one end frame which incorporates a vertical ladder located nearer to one side than the other and provided with anchor rails between the ladder stiles and the frame uprights, which anchor rails can carry struts or other parts.

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**3,837,428**

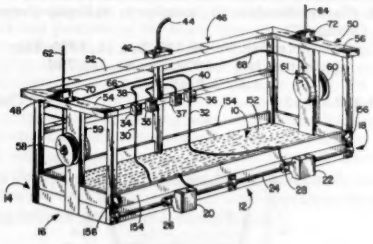
## SAFETY SCAFFOLD WITH ELECTROMAGNETS

**Leonard W. Gish, Rt. 1, Mountain Iron, Minn. 55768**

**Filed June 27, 1973, Ser. No. 374,254**

**Int. Cl. E04g 3/10, 5/04**

**U.S. Cl. 182—129** **4 Claims**



A safety scaffold with electromagnets for holding the scaffold securely to the building under construction.

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**3,837,429**

## TRAVELING SCAFFOLD

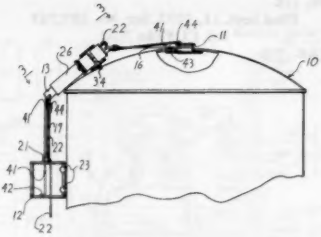
**Robert M. Harris, 1012 Fulton Ave., S.W., Birmingham, Ala. 35211**

**Filed Aug. 3, 1973, Ser. No. 385,535**

**Int. Cl. E04g 3/10, 3/12**

**U.S. Cl. 182—37** **10 Claims**

An elongated power driven roller unit is mounted on an elongated tubular member and is adapted to roll around an elevated structure having a round upper portion. Flexible lines are connected to opposite ends of the tubular member with the lowermost line connected to a work scaffold and the uppermost line connected to anchor means adjacent the top of the elevated structure. Other flexible support lines extend longitudinally through the tubular member with the upper ends thereof connected to the anchor means.



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**3,837,430**

## METHOD FOR THE MAINTENANCE OF THE OIL PRESSURE IN A CIRCULATION LUBRICATION SYSTEM FOR HIGHLY LOADED JOURNAL BEARINGS

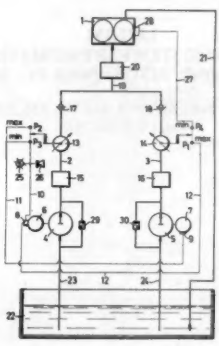
**Hanns Decker, and Heinz Hurtmanns, both of Cologne, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln, Germany**

**Filed Sept. 21, 1972, Ser. No. 290,992**

**Claims priority, application Germany, Sept. 23, 1971, 2147557**

**Int. Cl. F16n 29/02**

**U.S. Cl. 184—1 E** **7 Claims**

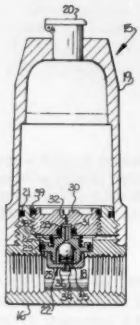


For the maintenance of the oil pressure in a circulation lubrication system for heavy duty friction bearings in large crushing machines a motor-driven main pump and a motor-driven auxiliary pump are used, with pressure responsive regulators arranged in the pressure lines of these pumps. Electric circuits are used which are controlled by said regulators in such a manner that the main oil pump is put into operation only after the auxiliary oil pump has produced a predetermined minimum oil pressure in said lubricating system, while the auxiliary oil pump is subsequently disconnected by the said electric circuit means when the main oil pump has raised the oil pressure in said lubricating system to the desired higher operating pressure.

## 3,837,431
## PULSED METERING LUBRICATOR

Ronny G. Freize, Gastonia, N.C., and George R. Ferguson, Clover, S.C., assignors to G. W. Murphy Industries, Inc., Houston, Tex.

Filed Sept. 11, 1972, Ser. No. 287,707
Int. Cl. F16n 7/30
U.S. Cl. 184—7 D 1 Claim

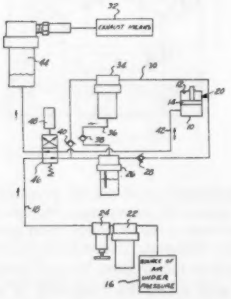


A cyclically operated pressure fluid actuated device is lubricated by an apparatus which dispenses measured quantities of lubricant into a pressure fluid conduit supplying the device on each increase in pressure in the conduit.

## 3,837,432
## LUBRICATION SYSTEM FOR PNEUMATIC DEVICE

Lorne J. McKendrick, 5131 Surfwood Dr., Milford, Mich. 48042

Filed Feb. 26, 1973, Ser. No. 335,508
Int. Cl. F16n 7/30
U.S. Cl. 184—7 D 11 Claims

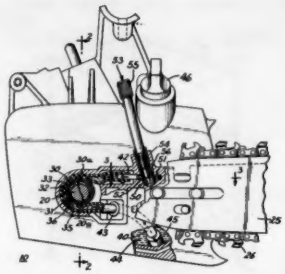


A pneumatic cylinder is actuated by an air supply system having means for introducing a mist of lubricating oil into the input air being delivered to the cylinder, and means for filtering the output air being exhausted from the cylinder to recover and recirculate the lubricant into the input air.

## 3,837,433
## LUBRICATING SYSTEM FOR CHAIN SAW

Roscoe Combs, Jr., Kankakee, and Richard W. Condon, Frankfort, both of Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed Mar. 5, 1973, Ser. No. 338,071
Int. Cl. F16n 7/16, 7/24, 13/22
U.S. Cl. 184—15 R 1 Claim

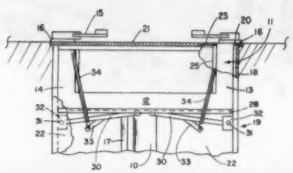


A lubricating system for a chain saw which includes a circular single-lobed cam on the sprocket drive shaft surrounded by an anti-friction bearing. The outer race of the bearing engages a C-shaped loop of flexible tubing progressively to produce peristalic action between the input end of the tubing which is connected to an oil reservoir and the output end which leads to the chain. The output has an adjustable restriction in the form of a throttling valve and an associated bypass line which shunts most of the oil back into the reservoir. The loop of tubing extends about the shaft substantially less than a full revolution and the eccentricity is limited so that the tubing is continuously open throughout its length during at least a portion of each revolution of the drive shaft for impositive pumping of the oil against the restriction for achieving an extremely low but reliable flow rate.

## 3,837,434
## DOOR STRUCTURE FOR RECESSED AUTO LIFT

Jesse E. Clarke, Hinsdale, Ill., assignor to Autoquip Corporation, Chicago, Ill.

Continuation of Ser. No. 98,737, Dec. 16, 1970. This application July 3, 1972, Ser. No. 268,798
Int. Cl. B66f 7/00
U.S. Cl. 187—8.62 7 Claims



A vehicle lift has a hydraulic cylinder and a U-shaped bolster, both of which are retracted in the floor when the lift is in the lowered position. A first door, positioned within the area defined by the bolster, rests on the floor when the bolster is in the lowered position and is picked up by the bolster when the vehicle is lifted. A second door is positioned about the ram below the bolster and rides on four pivoted arms. Springs connected to the arms supply force for raising the arms and the second door as the vehicle is raised. As the second door approaches the floor level, the arms pivot across vertical and are

blocked from further pivotal movement in that direction so that they become rigid posts to support the second door at the floor level. Cams on the bolster operatively engage the arms as the bolster descends so as to pivot the arms back across the vertical position and allow them to descend as the bolster presses downwardly on the second door.

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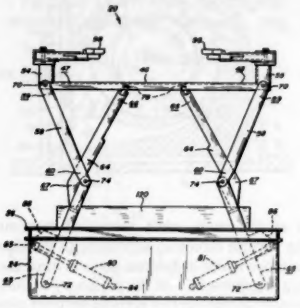
**3,837,435**
**VEHICLE LIFT**
**James J. Pelouch, 7041 Hilton Rd., Brecksville, Ohio 44141**
**Filed Jan. 10, 1973, Ser. No. 322,536**
**Int. Cl. B66f** *7/08*
**U.S. Cl. 187—8.72** **7 Claims**



The present disclosure relates to a vehicle lift which includes in combination a lifting beam having first and second end portions. Vehicle engaging and lifting means are connected to each of the first and second end portions of the lifting beam. A support frame having first and second end portions is also provided. First connecting links are located at each of the end portions of the beam and each has first and second portions. Second connecting links are also provided each of which has first and second end portions and an intermediate portion therebetween. The first end portions of the first connecting links are pivotally connected to the first and second end portions of the beam, respectively, and the first end portions of the second connecting links are pivotally connected to the first and second end portions of the support frame, respectively. The second end portions of the first connecting links are pivotally connected to the intermediate portions of the second connecting links, respectively. The second end portions of each of the second connecting links are provided with engagement means in the nature of rollers for engaging the lifting beam and motive power means in the nature of piston and cylinder arrangements are connected to the connecting links for raising and lowering the lift.

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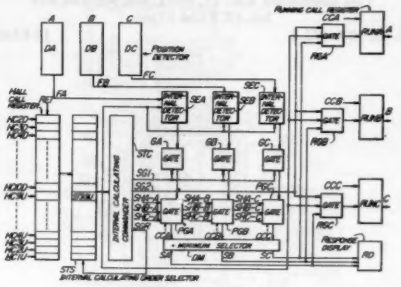
**3,837,436**
**ELEVATOR CONTROL SYSTEM**
**Kotaro Hirasawa; Koichi Kawatake, both of Hitachi, and Tatsuo Iwasaka, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**
**Filed June 25, 1971, Ser. No. 156,866**
**Claims priority, application Japan, July 1, 1970, 45-56938; July 1, 1970, 45-56939; July 10, 1970, 45-59918; July 20, 1970, 45-62847**
**Int. Cl. B66b** *1/18*
**U.S. Cl. 187—29 R** **15 Claims**

An improved elevator control system for maintaining a properly controlled interval between a plurality of elevator cars. The system includes means for detecting the time interval or spatial interval between a preceding elevator car, an intermediate elevator car and a succeeding elevator car. When the interval between the preceding and intermediate elevator cars is more than the interval between the intermediate and succeeding elevator cars, the intermediate elevator car is accelerated, while when the former interval is less than the latter interval, the preseding or succeeding elevator car is accelerated for maintaining a reasonable interval between these elevator cars.



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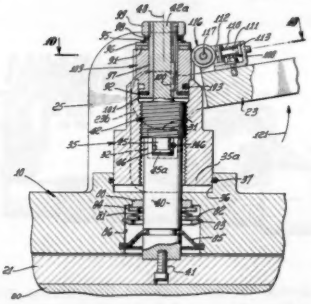
**3,837,437**
**RATCHET ACTUATED BRAKE WEAR COMPENSATION**
**Samuel J. Martins, Reseda, Calif., assignor to Airheart Products, Inc., Chatsworth, Calif.**
**Filed Jan. 22, 1973, Ser. No. 325,898**
**Int. Cl. F16d** *55/02*
**U.S. Cl. 188—71.8** **14 Claims**



A pneumatically actuated brake system employs a lever, and means responsive to lever swinging to receive primary force transmission via one portion of the lever for effecting advancement of a brake part into braking engagement with a moving part such as a disc, and to receive auxiliary force transmission from another portion of the lever to displace the brake part toward the disc in compensating relation to the degree of brake part wear, whereby the range of lever swinging may be quite limited.

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**ERRATUM**

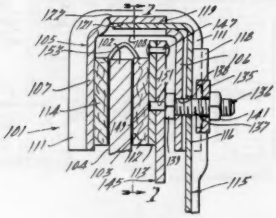
For Class 188—71.6 see:
Patent No. 3,837,420

3,837,438

## DISK BRAKE WITH SERVO ACTION

Harold S. Hollnagel, Milwaukee, Wis., assignor to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 65,080, Aug. 19, 1970, Pat. No. 3,708,040.
This application Apr. 17, 1972, Ser. No. 244,979
Int. Cl. F16d 55/46
U.S. Cl. 188—72.2 11 Claims



Two embodiments of disk brake assemblies embodying simplified actuators that include tilting pins. The pins are tilted to cause axial movement of the brake pads into frictional engagement with the associated brake rotor. The direction of tilting of the pins is such that a self-operating force is exerted upon the brake.

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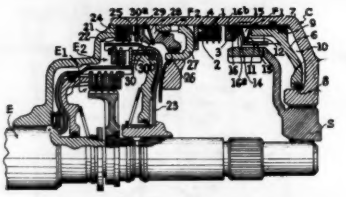
3,837,439

## BRAKE DEVICE FOR AN AUTOMATIC TRANSMISSION

Jean Piret, Bougival, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of, France, part interest to each

Filed July 26, 1971, Ser. No. 166,071
Claims priority, application France, July 30, 1970, 70.28141; June 30, 1971, 71.23964
Int. Cl. F16d 55/26
U.S. Cl. 188—72.6 8 Claims



Brake device for an automatic transmission mechanism comprising discs which are shifted to the interengaged braking position by a hydraulic actuating device having a moving element. At least one spring washer is interposed between an abutment integral with the case of the brake device and the moving element so as to resiliently return the moving element to the released brake position.

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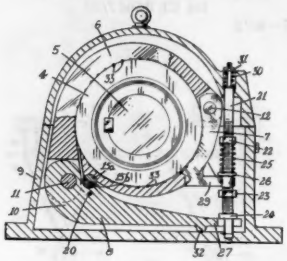
3,837,440

## BRAKING MECHANISMS

Christian F. Prins, P.O. Box 4167, Johannesburg, South Africa

Filed Nov. 29, 1972, Ser. No. 310,241
Int. Cl. F16d 65/06
U.S. Cl. 188—82.6 3 Claims

A braking mechanism or "hold back" is disclosed including a rotatable drum; a strap substantially encircling the periphery of the drum; a lever movable about a fulcrum located in a zone intermediate its ends, one end of the lever being pivotally connected to one end of the strap and the other end of the lever being constrained for movement within a predetermined range; an operative connection whereby movement of the lever is transmitted to the other end of the strap; and a chamber housing the several elements and defining a bath for an oil type liquid; the arrangement being such that normal rotational movement of the drum in one direction acts through the liquid disposed between the drum and the strap to urge the strap to an open position in which it does not obstruct



movement of the drum, while rotational movement of the drum in the reverse direction acts through the liquid to urge the lever to move about its fulcrum so as to draw the strap into firm braking engagement with the periphery of the drum. The strap preferably comprises two arcuate sections pivotally connected to each other with a pivotal connection being provided between the free extremity of the first strap section and one end of the lever and a pressure zone in which movement of the lever about its fulcrum in a direction to exert a braking force is transmitted to the free end of the second strap section to tighten the strap about the periphery of the drum.

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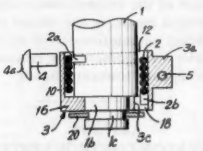
3,837,441

## SPRING BRAKE

Naoyuki Uno, Kawagoe, and Koichiro Watanabe, Funabashi, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 3, 1973, Ser. No. 347,568
Claims priority, application Japan, Apr. 19, 1972, 47-45631[U]
Int. Cl. F16d 51/04
U.S. Cl. 188—82.6 6 Claims



A spring brake assembly particularly suitable for devices such as cameras. Inner and outer rotary members which have a common axis are turnable each with respect to the other about their common axis, the outer member having a wall extending around but spaced from the inner member so that this wall has an inner surface directed toward the inner member. A cylindrical coil spring is situated between the inner and outer members in frictional engagement with the latter inner surface, the cylindrical coil spring having an axis coinciding with the common axis of the inner and outer members and being connected at one end to the inner member for turning movement with the latter. Thus, when the inner and outer members

are turned one with respect to the other in a direction tending to unwind the coil spring, the frictional engagement between the inner surface and the coil spring increases, while when the inner and outer members are turned one with respect to the other in a direction tending to wind the coil spring further, the frictional engagement between the coil spring and inner surface decreases.

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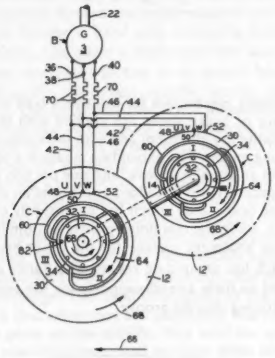
**3,837,442**
**BRAKE DEVICE FOR VEHICLES**
**Max Baermann, 506 Bensberg, Cologne/Rhine, Germany**
**Filed July 13, 1973, Ser. No. 378,930**
**Claims priority, application Germany, Feb. 2, 1973, 2305042**
**Int. Cl. H02k** *49/00*
**U.S. Cl. 188—159** **12 Claims**



A braking device for vehicles includes a multi-phase generator on the vehicle driven by movement of the vehicle for generating multi-phase electric current. Induction motor means includes a stator and a part which moves relative to the stator during movement of the vehicle. The stator is fixed to the vehicle against movement relative thereto. The generator is connected with the stator of the induction motor for producing a traveling magnetic field in the stator which exerts a force on the moving part in a direction tending to propel the vehicle in a direction opposite to its then direction. This applies a braking force to the vehicle.

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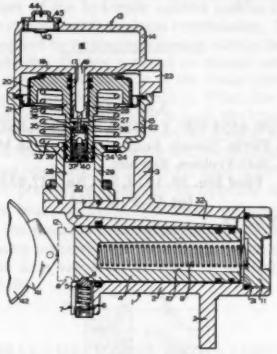
**3,837,443**
**SLACK ADJUSTER FOR HYDRO-PNEUMATIC BRAKE UNIT HAVING AUTOMATIC AIR BLEED**
**Quentin T. Clemmons, Greensburg; Ronald W. Coiner; William B. Jeffrey, both of Irwin, and Allen W. Kyllonen, Pittsburgh, all of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.**
**Filed Dec. 10, 1973, Ser. No. 423,405**
**Int. Cl. F16d** *65/54*
**U.S. Cl. 188—196 A** **8 Claims**

A slack adjuster device for hydro-pneumatic railway truck-mounted brake units having the slack adjuster mechanism mounted in a vertical disposition relative to the brake unit to provide vertical gravitational flow of fluid from the hydraulic fluid reservoir to the pressure side of the hydraulic piston during the return or release stroke of the piston so that any air inadvertently present in the hydraulic fluid chamber on the pressure side of the hydraulic piston may flow vertically upwardly and escape via an air vent in the hydraulic fluid reservoir.



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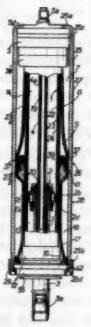
**3,837,444**
**OLEOPNEUMATIC SHOCK ABSORBERS**
**Fernand Michel Allinquant, 53, Ave. Le Notre, and Jacques Gabriel Allinquant, 12, Ave. Arouet, both of Sceaux, France**
**Filed Nov. 13, 1973, Ser. No. 415,363**
**Claims priority, application France, Nov. 17, 1972, 72.40984**
**Int. Cl. F16f** *9/08*
**U.S. Cl. 188—315** **9 Claims**



An oleopneumatic shock absorber comprising two coaxial tubes separated by an annular space which is divided by a transverse partition into two compartments each containing a chamber containing hydraulic fluid, each chamber being separated from a respective chamber containing gas by a sleeve of elastomeric material provided with an inner annular flange at its end adjacent to the partition, and with an outer annular flange at its end adjacent to one end of the shock absorber, wherein there is provided a device screwed onto the shock absorber so as to compress the outer flange of one of the sleeves against a fixed part of the shock absorber thus closing a passage which opens into the adjacent chamber containing gas and which communicates with a gap included between the co-operating threads of the shock absorber and of the device, and an annular unit which is supported on the device

by a distance-piece so as to compress the inner flange of the one resilient sleeve against a further fixed part of the shock absorber in order to close another passage linking the two chambers containing gas via the transverse partition.

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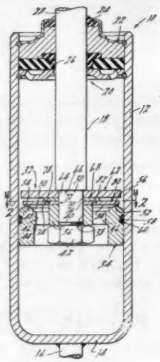
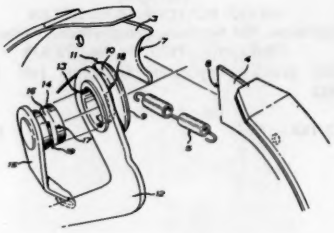
**3,837,445**
**PISTON ASSEMBLY FOR A SHOCK ABSORBER**
**Willy R. J. Pierle, Tienen, Belgium, assignor to Monroe Belgium N.V., Sint-Truiden, Belgium**
**Filed Jan. 30, 1973, Ser. No. 327,933**
**Int. Cl. F16f 9/34**
**U.S. Cl. 188—322** **4 Claims**



The invention relates to a piston assembly for a direct acting hydraulic shock absorber including a cylinder containing damping fluid and a reciprocal piston rod. The assembly comprises a piston member formed with a plurality of circumferentially spaced axially extending flow ports and an annular cavity having inner and outer circular walls, the inner wall defined by a generally cylindrical body portion concentric with and surrounding the piston rod, the outer wall including an annular peripheral shoulder extending axially from the piston and defining a flat, radially extending sealing surface, the surface being formed with a first plurality of circumferentially spaced bleed openings. A washer concentric with the piston rod and the inner cylindrical projection is carried in fixed position with relation thereto and spaced axially from the cylindrical body portion. A thin resilient valve disc is positioned across the cavity and has its radially outer marginal portion seated against the surface and adapted for movement in a first axial direction away from the shoulder; the radially inner marginal portion of the valve disc being seated against the washer and adapted for movement away from the washer in a second axial direction. A disc shaped metering element is positioned immediately axially inwardly of the first named washer in the space between the first named washer and the cylindrical body portion, the inner diameter of the valve member and the outer diameter of the metering element defining a second plurality of circumferentially spaced bleed openings therebetween, whereby movement of the piston member in one direction causes pressure of damping fluid against the valve member in the opposite direction and causes the valve disc to yieldably flex away from one or its seats and provide an annular opening between the adjacent portions of the valve member and the seat for communicating fluid to and from the ports.

**3,837,446**
**BRAKE OPERATING MECHANISMS**
**Rune Nilsson, Lindesberg, Sweden, assignor to AB Linde International, Lindesberg, Sweden**
**Filed Mar. 16, 1973, Ser. No. 341,943**
**Claims priority, application Sweden, Mar. 22, 1972, 3657/72**
**Int. Cl. F16d 51/22**
**U.S. Cl. 188—329** **3 Claims**



An operating mechanism for a simplex type drum brake in which a pair of brake shoes are applied with their one ends against a stationary abutment and with their other ends against an expanding means. The expanding means is a rotatable body formed with an annular groove, and one portion of the groove bottom is eccentrically localized and forms an abutment surface for one brake shoe which has an abruptly cut transverse end surface, while the remaining groove bottom is arcuate and serves as an abutment surface for the other brake shoe, the end of which has an arcuate recess. The flanks of the groove are adapted to form lateral supports for the two brake shoe ends penetrating into the groove.

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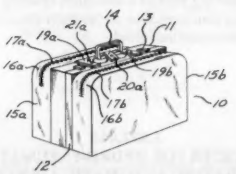
**3,837,447**
**LUGGAGE ACCESSORY**
**Bernard M. Honan, 46 Riverdale, Tuscaloosa, Ala. 35401**
**Filed Dec. 13, 1971, Ser. No. 207,183**
**Int. Cl. A45c 13/00**
**U.S. Cl. 190—52** **1 Claim**



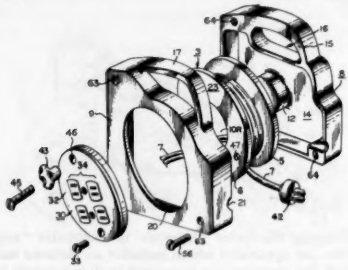
There is disclosed herein a luggage accessory for use with a conventional suitcase or attache case. A pair of like, generally rectangular, zippered bags having substantially the same side contour as the suitcase are connected together at the bottom inner edges thereof by a flexible web. The suitcase is disposed on the web between the zippered bags, and overlapping flaps carried at the upper inner edges of said bags project over top of the suitcase and are detachably connected to each other around and through the suitcase handle.

**3,837,448**

## LINE CORD CADDY

**Leonard Hagstrom, Rt. 2, Box 220, Ashland, Wis. 54806**

**Filed Dec. 15, 1972, Ser. No. 315,651**
**Int. Cl. H02g** *11/00*
**U.S. Cl. 191—12.4** **7 Claims**



An extension-cord caddy comprising a spool having an extension cord wound thereon and being encased within a stand-up type cover having a hand grip extending relatively upwardly therefrom. The cover is made up of two saucer-shaped cover sections, one cover section in its central body portion having an inwardly projecting spindle serving as a spool mounting axle. The spindle by design has substantially shorter axial length than that of the spool bore, thereby contributing to the provision of a recess in said bore disposed beyond the spindle end-face for receiving a single or duplex receptacle member including a plurality of plug-in sockets which are accessible thru a circular receptacle face-plate affixed to the spool flange next adjacent the companion cover section. The companion cover section is provided in its body portion with a circular opening having diameter substantially equalling that of the receptacle face-plate and appreciably less than that of the said spool flange. The axial dimensions of the cover sections are such that when they are assembled one to the other with spool in place on the spindle, they hold the spool to the spindle, and also their inner-wall surfaces press on the outer surfaces of the spool side flanges, thereby engendering a drag force effective on the spool which prevents too fast turning thereof upon the extension cord being unspooled in use of the device.

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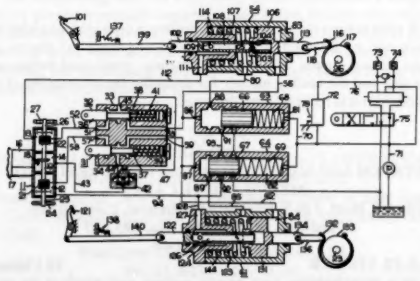
**3,837,449**

## TRANSMISSION CONTROLLED SPRING APPLIED STEERING BRAKES

**Gary A. Drone, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Milwaukee, Wis.**

**Filed May 7, 1973, Ser. No. 358,136**
**Int. Cl. F16d** *67/04;* **B60k** *29/00*
**U.S. Cl. 192—4 C** **7 Claims**



The vehicle is provided with a pair of spring applied brakes which are individually controllable through hydraulic actuators acting in opposition to the springs. The brakes are individually controlled by a valve associated with the hydraulic actuators and are automatically, simultaneously applied by operation of brake pressure regulating valves which are biased by the pressure of the hydraulic control system for the forward-reverse clutches of the vehicle transmission. The vehicle brakes are applied by balancing pressure across the piston of the brake actuator. During forward or reverse travel of the vehicle, the pressure on one side of the brake actuator compresses the spring to release the brakes. When low fluid pressure is supplied as when the engine is dead, the brake actuator pressure will drop thereby permitting the springs to apply the brakes. When the engine is running and the hydraulic systems are functioning normally, the brakes are applied by the springs whenever the pressure is balanced on opposite sides of the spring loaded brake actuator. The brake pressure regulator valves cause the pressure to be balanced at reservoir pressure when the biasing pressure from the change speed transmission control drops to a low level as when in neutral or during directional shifts.

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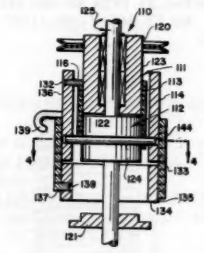
**3,837,450**

## CLUTCH BRAKE MECHANISM WITH A LOST MOTION CONNECTION

**William R. Malion, Box 69, Willoughby, Ohio 44094, and John E. Watkins, 9674 Fairmount Rd., Novelty, Ohio 44072**

**Filed Nov. 6, 1972, Ser. No. 304,046**
**Int. Cl. F16d** *67/02, 43/00, 13/04*
**U.S. Cl. 192—12 BA** **1 Claim**



A clutch brake mechanism including input and output members normally drivingly connected by a helical coil spring disposed therearound. One end of the spring is connected to the output member. The other end connects with a sleeve disposed around the spring. A braking system is operable to selectively brake the rotation of the sleeve whereby the ends of the spring are rotated relative to each other, releasing the grip of the spring coils about the input member and interrupting the driving connection normally provided by the spring. In one embodiment, the braking system is operative to brake the sleeve only when actuated while in another embodiment, the braking system is of the "deadman" type, normally braking the sleeve. A lost-motion connection between the sleeve and the output member limits the twisting of the spring during braking and assures positive braking of the output member, even in the event of failure of the spring.

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**3,837,451**

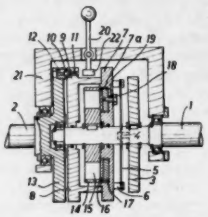
## TORQUE-LIMITING CLUTCH

**Jean R. Gaillochet, Neuilly, France, assignor to MARINONI, Paris, France**

**Filed Dec. 27, 1972, Ser. No. 318,723**
**Claims priority, application France, Feb. 7, 1972, 72.4024**
**Int. Cl. F16d** *7/02*
**U.S. Cl. 192—56 R** **7 Claims**

This invention permits the counter-balancing of the longitudinal movement due to the transmitted torque of the sliding

member with respect to the other member in a torque-limiting clutch of the indexed-release type comprising two oppositely-facing members coupled for rotation, one to the driving shaft and the other to the driven shaft. According to the invention,



permanent magnets carry out the function of counter-balancing and are advantageously housed in an enclosed space. The invention is especially applicable to the protection of a machine driven by a driving device when this machine becomes mechanically blocked.

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**3,837,452**

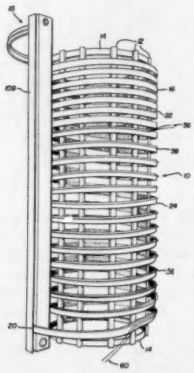
**METHOD AND APPARATUS FOR CONVEYING WORKPIECES**

**Henry A. Schuricht, Pontiac, Mich., assignor to Hydromation Filter Company, Livonia, Mich.**

**Filed Feb. 23, 1973, Ser. No. 335,207**

**Int. Cl. B65g** *11/06, 11/20*

**U.S. Cl. 193—12** **23 Claims**



A method and apparatus for conveying workpieces under the influence of gravity from an upper vertical level to a lower vertical level wherein the workpieces have exposed critical, e.g., machined, surfaces which must be protected from contact from other workpieces and from the conveying apparatus itself. A first track has a plurality of rolling separators mounted therein and a second track, adjacent and parallel to the first track is provided to support the workpieces by contacting non-critical portions thereof. The separators have projections which extend into the path of those workpieces in the second track. The separators are interposed between the workpieces, and the projections on the separators maintain the workpieces in a spaced-apart relationship and advance the workpieces along the second track. At the bottom of the second track, only the workpieces are discharged from the conveying apparatus and the separators are recirculated to the upper vertical level of the apparatus for reuse.

**3,837,453**

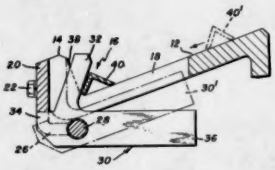
**MATERIAL HANDLING APPARATUS**

**Kenneth L. Klusmier, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.**

**Filed Jan. 15, 1973, Ser. No. 323,642**

**Int. Cl. B65g** *11/20*

**U.S. Cl. 193—40** **3 Claims**



For receiving elongated elements, in particular "angles" and the like, an apparatus which includes an inclined surface along which the elements are permitted to slide laterally into a receiving notch. Counterweighted pivotal finger members protrude through slots at the receiving notch. The finger members absorb the sideward force of the elongated elements while at the same time exerting a retaining action thereon which serves to prevent elements entering the receiving notch from turning or flipping. The finger members are designed to recede into their respective slots as each element is removed from the receiving notch, and to thereafter return to their operative positions in preparation for receipt of the next element.

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**3,837,454**

**COIN TESTING DEVICES**

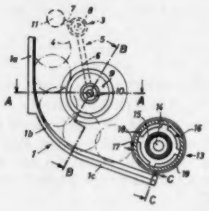
**Willi Friedrich Joeck, Buxtehude, Germany, assignor to National Rejectors Inc. GMBH, Buxtehude, Germany**

**Filed Oct. 27, 1972, Ser. No. 301,623**

**Claims priority, application Germany, Nov. 4, 1971, 2154782**

**Int. Cl. G07f** *3/02*

**U.S. Cl. 194—1 K** **10 Claims**



A coin testing device which comprises a coin slot into which coins can be inserted, a coin track leading from the slot to a coin testing means, and damping means, positioned between the slot and the testing means, for damping the movement of a coin when it is rolling along the track.

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**3,837,455**

**SYSTEM AND METHOD FOR CUSTOMER RETURN OF MERCHANDISE CARTS**

**Arthur J. Hurt, 720 S. Elizabeth St., Denver, Colo. 80209**

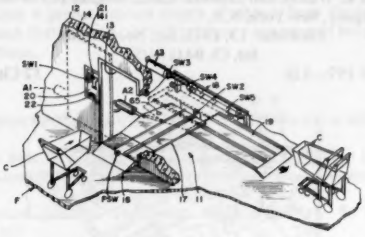
**Filed Oct. 10, 1972, Ser. No. 295,857**

**Int. Cl. G07f** *1/06*

**U.S. Cl. 194—4 R** **10 Claims**

In a merchandise cart return system and method to encourage the customer to return the merchandise cart to the store after use, there is provided a cart-receiving area nor-

mally blocked off by a partition including a movable door to control admittance of a cart into the cart receiving area and block the retraction of the cart from the area once it has been placed therein. The door is opened in response to the placement of the cart in front of the door and the presentation of a token given to the customer when a purchase is made. Once



the cart is placed in the cart receiving area via the doorway, the door closes and a payoff device is actuated to pay out a reward for the return of the cart. To further position the cart, if desired, a turntable turns the carts so that the handle faces the direction of movement and a takeaway mechanism moves the cart from the turntable for subsequent pickup by the customers entering the store.

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**3,837,456**

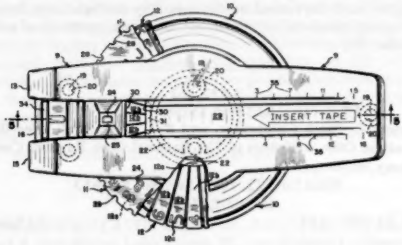
**EMBOSSING TOOL**

**Henry Ruskin, Cranford, N.J., assignor to Swingline, Inc., Long Island City, N.Y.**

**Filed Jan. 2, 1973, Ser. No. 320,657**

**Int. Cl. B41j** *1/24*

**U.S. Cl. 197—6.7** **11 Claims**




An embossing tool for tape strip labels comprises a single-piece plastic extrusion capable, upon being folded clam-wise, of forming two halves of the tool housing and an integral embossing lever, and two mating embossing discs mounted in the housing for embossing a strip of plastic tape fed between the discs along the radii thereof.

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**3,837,457**

**SINGLE ELEMENT PRINTER HAVING A CLOSED LOOP DIGITAL ELECTRONIC CONTROL**

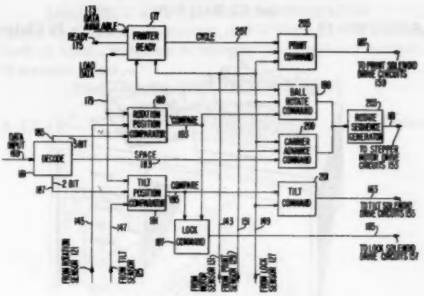
**Noah L. Anglin, and Roy J. Machamer, both of San Jose, Calif., assignors to Office Communications, Inc., Sunnyvale, Calif.**

**Filed June 15, 1972, Ser. No. 263,125**

**Int. Cl. B41j** *1/60, 23/04*

**U.S. Cl. 197—18** **7 Claims**

A single spherical ball printing element having a plurality of print characters on its outside surface in rows and columns is selectively operated to present a single desired print character in a printing position in response to a digital electronic data input signal. In moving the ball to its selected position, the digital input data character signal is compared with a digital



signal proportional to the position of the print ball. When the print ball reaches its desired position where the digital position signal corresponds with the data input signal, the ball is impacted against a printing surface to print the selected character.

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**3,837,458**

**CODED INPUT AND OUTPUT APPARATUS FOR TYPEWRITERS**

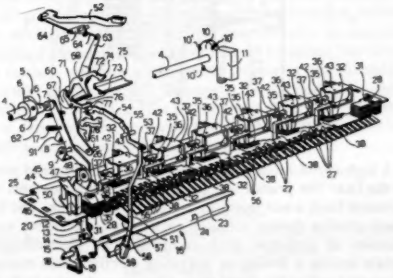
**Franco Bretti, Are di Caluso (Turin), and Franco Valle, Ivera (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Turin, Italy**

**Filed July 19, 1972, Ser. No. 273,080**

**Claims priority, application Italy, July 20, 1971, 69435/71**

**Int. Cl. B41j** *5/30*

**U.S. Cl. 197—19** **11 Claims**



A typewriter is provided with an input and output apparatus having receiving and transmitting bars. The receiving bars are urged by springs and are latched to latches controlled by electromagnets. A series of decoding levers senses the receiving bars on receiving of input signals for setting one of said decoding levers corresponding to the combination of positions of the receiving bars. A lever rocked by a continuously rotating cam causes the decoding lever so set to be shifted for actuating the type-hammer associated thereto.

**3,837,459**
**WORD PROCESSOR WITH MEANS FOR PROGRAMMING INDENTED PARAGRAPH FORMAT**
**Peter G. Martin, Arlington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.**
**Filed Dec. 4, 1972, Ser. No. 311,451**
**Int. Cl. B41j** *5/30*
**U.S. Cl. 197—19** **26 Claims**

The invention relates to a word processor of the type utilizing a typewriter as an input/output printer, and comprises indented paragraph typewriter programming and control means for causing the typewriter to establish and maintain a desired indented paragraph format.

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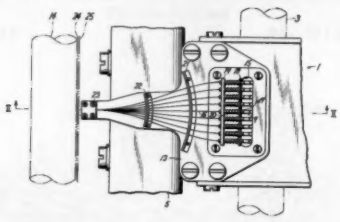
**3,837,460**
**HIGH-SPEED DRIVING DEVICE FOR PRINTER OR THE LIKE**
**Yoshinori Chida, Matsudo, and Naonobu Sawada, Tokyo, both of Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan**
**Filed Feb. 7, 1973, Ser. No. 330,318**
**Claims priority, application Japan, Feb. 8, 1972, 47/13265**
**Int. Cl. B41j** *3/10*
**U.S. Cl. 197—1 R** **10 Claims**



A high-speed driving device for use in a high-speed printer or the like. The printer has actuatable printing elements each actuated from a rest position to a printing position. The high-speed driving device actuates each printing element with a plurality of actuators each comprising an electromagnetic system having a driving or operating electrical coil receptive of current pulses for developing opposite polarities in its core in conjunction with pole pieces forming a magnetic field for rocking to an operative position and to an inoperative rest position the core having a pole varied thereon and extending into a gap between the pole pieces. The core is constructed with a multiplicity of extensions or lever arms, one of which is normal to the core portion within the coil and engages a corresponding actuatable element to actuate it to its operative position when the core is rocked. The core is restored to its rest position by application to the operating coil of current of opposite polarity to the current actuating it to its operative position. A spring restores each actuatable printing element to its rest position in readiness for a next printing step. Each core is rockably mounted in a carriage for travel relative the actuation elements so that high-speed printing can be carried out.

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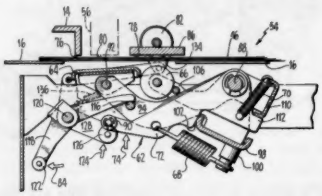
**3,837,461**
**PRINT STATION FOR A MATRIX PRINTER**
**Helmut K. Waibel, San Leandro, Calif., assignor to The Singer Company, New York, N.Y.**
**Filed Mar. 13, 1973, Ser. No. 340,869**
**Int. Cl. B41j** *11/58*
**U.S. Cl. 197—126** **12 Claims**



A platen assembly for feeding and holding single or multilayer record media for printing thereon which accommodates the rather limited thrust of the wires of a matrix type printer, said assembly comprising a platen and one of a pair of feed rollers pivotally mounted so as to yieldingly engage the record media during the printing operation. The platen yieldingly engages and holds the record media against guides which determine the gap between the matrix head for proper operation of the wires and the roller yieldingly engages the record media to hold the media against a power feed roller during the printing operation. For line-by-line printing, the platen is temporarily disengaged from the record media while the pressure roller and power feed roller move the record media the required distance before the platen again engages the media. This platen assembly is particularly useful in point-of-sale data terminals where the record media is usually multiple copy forms of varying numbers for bills of sale, invoices, contracts of sale, and the like.

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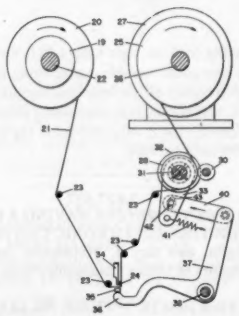
**3,837,462**
**PRINTING RIBBON INDEXING SYSTEM**
**Ramesh U. Patel, Cambridge, and Rex A. Aleshire, Byesville, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio**
**Filed Nov. 22, 1972, Ser. No. 308,653**
**Int. Cl. B41j** *33/14*
**U.S. Cl. 197—151** **4 Claims**



A low cost printing ribbon indexing mechanism for use with a printing mechanism utilizing a single operating hammer

member. The indexing mechanism includes a printing ribbon supply reel mounted on a slip clutch, a motor driven take-up reel supplying tension to the ribbon, a feed roll mounted on a one-way clutch, a plurality of link members forming an assembly engaging the clutch and feed roll and actuated by the movement of the hammer in a printing direction to condition the clutch and feed roll for a feed operation and a resilient member engaging said assembly to operate the feed roll to withdraw a predetermined length of ribbon from the supply reel such that the hammer will print on a new area of the printing ribbon.

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**3,837,463**

## RIBBON SPOOL HAVING PLASTIC DISCS AND A METAL CORE

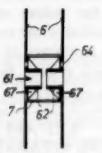
**Horst Bille, Wuppertal-Vohwinkel, Germany, assignor to Regentrop & Bernard KG, Wuppertal-Vohwinkel, Germany**

**Filed Apr. 11, 1973, Ser. No. 350,275**

**Claims priority, application Germany, Mar. 8, 1973, 2311361**

**Int. Cl. B41j** *35/00*

**U.S. Cl. 197—175** **4 Claims**




A ribbon spool for typewriters, accounting machines, business machines and the like for mounting on a spool pin comprises a pair of plastic discs. A metallic spool core is bent into cylindrical shape and secures the discs so as to be concentric and parallel spaced-apart. Each disc includes a plurality of slots disposed therethrough. One side of each disc includes an injection molded channel having an integrally formed circular collar extending therefrom for engaging the spool core. The channels further include a plurality of reinforcing ribs radially disposed from the channel and extending to the collar periphery. The plastic discs have longitudinal recesses placed on their face opposite the channel for receiving a plurality of bending lugs extending from and along the spool axis. By utilizing a metallic spool core a pointed catch may be employed for fastening the ribbon to the spool.

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**3,837,464**

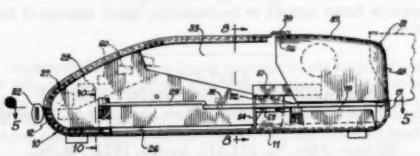
## TYPEWRITER WITH SLIDING TAMBOUR COVER

**Karl T. Baughman, Lake Forest, Ill., and Richard L. Shannon, Piqua, Ohio, assignors to Sears, Roebuck and Co., Chicago, Ill.**

**Filed Oct. 15, 1973, Ser. No. 406,226**

**Int. Cl. B41j** *29/02*

**U.S. Cl. 197—186 R** **5 Claims**



A typewriter or like apparatus having a built-in tambour cover which provides a readily available closure for the typewriter for storage and transport purposes, the tambour cover being operatively connected to the rearward portion of the housing which is slidable and which is caused to be moved by movement of the cover to open and closed positions.

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**3,837,465**

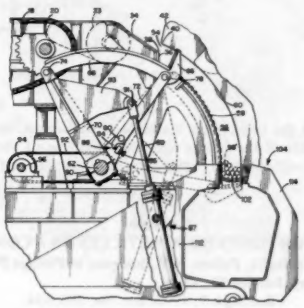
## ASSEMBLY AND TRANSFER APPARATUS

**Kenneth L. Klusmier, Worcester, and William J. Hill, Holden, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.**

**Filed Mar. 30, 1973, Ser. No. 346,685**

**Int. Cl. B65g** *47/08*

**U.S. Cl. 198—27** **16 Claims**



An apparatus for laterally receiving elongated elements at an upper first location, for assembling the elements thus received, and for transferring the assembled elements downwardly to a lower second location. The apparatus includes a pair of spaced opposed guide surfaces defining an assembly and transfer zone which extends downwardly from the upper to the lower of the aforesaid locations. Carrier members protrude into and are movable along the length of the zone. Elongated elements are fed laterally, and preferably although not necessarily singly, into the zone through an inlet at the upper location. The elements are initially retained adjacent to the inlet and against the carrier members and are thus assembled at the upper end of the zone. The carrier members are moved downwardly along the length of the zone, initially for the purpose of accommodating the entry of elements into the zone during the assembly thereof, and thereafter to carry the assembled elements to the lower second location. The invention further includes apparatus for receiving the assembled elements at the second location, for carrying the same laterally to a third location where the elements are strapped into a dense bundle, and then to a fourth location where the bundle is delivered to other handling apparatus.

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**3,837,466**

## BRICK HANDLING

**Robert E. Jones, 15 S. Oak Forest Dr., Asheville, N.C. 28803**

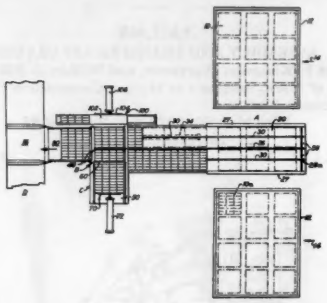
**Filed Oct. 6, 1972, Ser. No. 295,613**

**Int. Cl. B65g** *47/24*

**U.S. Cl. 198—30** **36 Claims**

An automatic handling of brick for assembling bricks into a standard brick pack for shipment, method and apparatus whereby bricks are transferred from a kiln car or other supply station to a transfer or blending station in a predetermined number of rows; a certain number of rows are removed from said bricks at said transfer station to reduce the number of rows for further processing at a further station beyond said transfer station; the removed rows of bricks are accumulated and subsequently added to another group of bricks conveyed to said transfer station to form a third group of bricks suitable

for processing at said further station. The above process not only serves to assemble the bricks into a predetermined size suitable for receipt in trays of a conveyor used for further processing the bricks into a standard brick pack, but it also serves to blend the bricks with the objective of obtaining a uniform blend of bricks within each brick pack to be formed.



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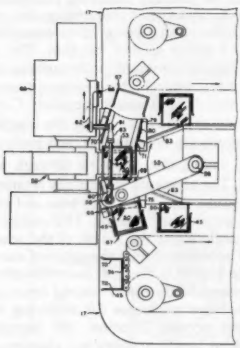
**3,837,467**

**MEANS FOR POSITIONING ARTICLES ON A CONVEYOR**

**Silvio T. Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed Sept. 7, 1973, Ser. No. 395,034**
**Int. Cl. B65g *47/24***
**U.S. Cl. 198—31 AC** **10 Claims**



A transfer means moves an article between guide plates into an article holder at a transfer station on a conveyor. A positioning element is pivotably mounted adjacent the downstream guide plate to contact the article in the holder as the conveyor moves the holder and article away from the transfer station to properly position the article in the holder. The apparatus can be used to position rectangular cartons in rectangular article holders.

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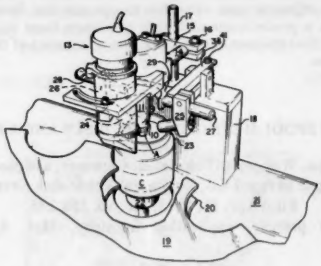
**3,837,468**

**GLASS CONTAINER INSPECTION SYSTEM**

**David E. Mills, Bridgeton, N.J., and Thomas B. Sorbie, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio**

**Filed July 16, 1973, Ser. No. 379,638**
**Int. Cl. B65g *47/24***
**U.S. Cl. 198—236** **6 Claims**

In the handling of glass containers into optical inspection stations and maintaining the containers at specific positions during rotation of the containers is an important consideration. The present case is directed to an arrangement of rollers which will engage the inner rim surface of the finish of the container when the container is elevated in the inspection station. The rollers are mounted so that they extend inwardly and downwardly with respect to the container finish. With this arrangement and with the rollers spring-biased against the elevated container, rotation of the container about its vertical axis will maintain the container at a specific axial position relative to the inspection system, the rollers and the pad on which the container is supported.



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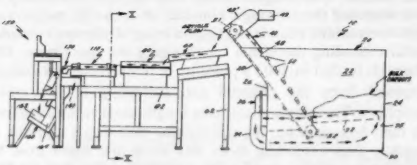
**3,837,469**

**PRODUCT ORIENTING APPARATUS FOR PACKAGING**

**Lee S. Kihnke, Spring Lake, Mich., assignor to Dake Corporation, Grand Haven, Mich.**

**Continuation-in-part of Ser. No. 254,076, May 17, 1972. This application Apr. 9, 1973, Ser. No. 348,974**
**Int. Cl. B65g *37/00***
**U.S. Cl. 198—106** **21 Claims**



Apparatus for conveying and orienting elongated articles in preparation for packaging comprising multiple sections adapted to successively linearly space and longitudinally align in columns a plurality of said articles after they are received randomly in the first of said sections. The sections are aligned rectilinearly and comprise a surge tank and elevating conveyor; a reciprocating, vibratory conveyor which segregates the articles into columns; a conveyor having endless belts with generally V-shaped cross sections; and a final conveyor having endless flat belts, the last three conveyors being located at successively lower levels. The sections are driven at successively faster speeds to facilitate the linear spacing of the articles.

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**3,837,470**

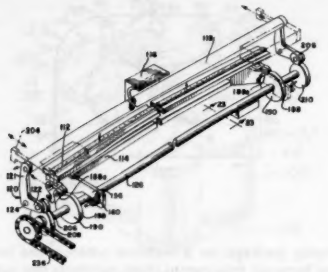
**APPARATUS FOR TRANSFERRING OBJECTS**

**Albert Dunkin, South Norwalk, Conn., assignor to Diamondhead Corporation, Mountainside, N.J.**

**Division of Ser. No. 241,111, April 5, 1972, Pat. No. 3,765,073. This application Apr. 11, 1973, Ser. No. 350,185**
**Int. Cl. B65g *15/60***
**U.S. Cl. 198—184** **7 Claims**

An improved belt drive and control mechanism for an object transfer apparatus of the type in which different phases of

transfer operation are effected by selective linear travel in transfer apron forming flight portions of an endless belt. The flight length of a loop formation in the apron forming endless belt is varied concurrently with alternate energization of primary and secondary belt brakes to achieve the desired flight travel in the transfer apron. The secondary belt brake includes a brake shoe and a braking roller. The braking roller is supported and actuated by a pair of bell cranks in conjunction



with a pair of roll brake actuating cams. The peripheral configurations of the cams are identical and the cams are mounted on a cam shaft so that corresponding points are displaced by 180°. The braking roller may perform both a braking function and a tracking or steering function depending upon the relative positions of the actuating cams. A detecting and control arrangement serves to automatically actuate the cam shaft to correct belt tracking.

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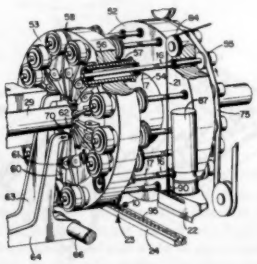
**3,837,471**

**APPARATUS FOR CONVEYING ARTICLES**

**Theodore H. Van der Schoot, Deering, N.H., assignor to GTE Sylvania Incorporated, Stamford, Conn.**

**Division of Ser. No. 117,959, Feb. 23, 1971, Pat. No. 3,735,732.**
**This application Feb. 22, 1973, Ser. No. 334,682**
**Feb. 22, 1973, Ser. No. 334,682**
**Int. Cl. B65g** *29/00*
**U.S. Cl. 198—210** **4 Claims**



Apparatus for applying liquid material to the edges of a die of semiconductor material mounted between two conductive plugs. The plugs and intervening die constitute a semiconductor element which is fed from a vibratory feeder to a transfer wheel and then gripped between a pair of opposed spindles of a conveyor wheel. The conveyor wheel carries the semiconductor element with the spindles rotating into a work station. At the work station the edges of the rotating semiconductor die come into contact with continuously moving filamentary material which passes through a vessel containing liquid coating material before contacting the semiconductor element at the work station. The filamentary material picks up liquid material from the vessel and transfers it to the edges of the die of the semiconductor element at the work station.

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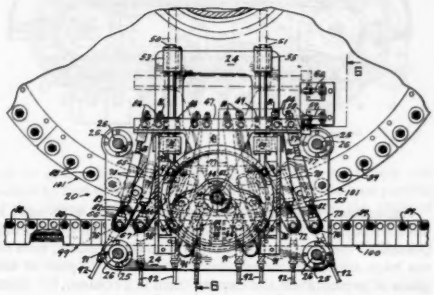
**3,837,472**

**TRANSFER APPARATUS**

**Dale L. Byerly, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio**

**Filed Feb. 2, 1973, Ser. No. 329,133**
**Int. Cl. B65g** *25/04*
**U.S. Cl. 198—218** **11 Claims**



The invention is a transfer apparatus for moving a plurality of spaced articles between a linear path and an arcuate path or between an arcuate path and a linear path and at the same time changing the spacing between the articles. A first cam is attached to a rotatable shaft. The first cam supports a lower cam and a lower guide plate. Pick-up heads are moved in response to the cam paths and are horizontally translated along guide slots in the guide plate.

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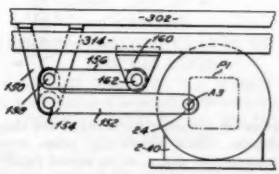
**3,837,473**

**MECHANICAL DRIVE FOR TRANSFER SYSTEM**

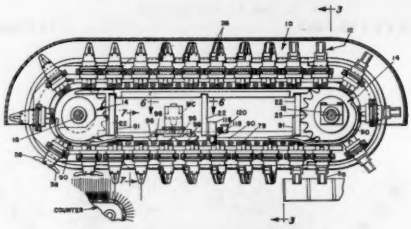
**John Henry Brems, 32867 White Oaks Trl., Birmingham, Mich. 48010**

**Filed June 26, 1972, Ser. No. 266,454**
**Int. Cl. B65g** *25/04*
**U.S. Cl. 198—219** **15 Claims**



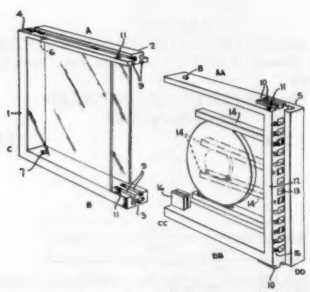

A mechanical drive system for a transfer system using a transfer bar and a power bar which can provide a smooth acceleration and deceleration including a power system with a rotary input, and an output which is quadratic in following a continuous path having two parallel strokes in opposite directions and two parallel strokes normal to the other strokes, and an interconnection which results in the transfer bars moving together during two of the four strokes and moving relative to each other in the other two strokes.

3,837,474
**ARTICLE HANDLING APPARATUS**
Arthur Alan Brooke, Toronto, Canada, assignor to Dalamere & Williams Company, Limited, Toronto, Ontario, Canada
Division of Ser. No. 198,179, Nov. 12, 1971. This application June 18, 1973, Ser. No. 371,233
Int. Cl. B65q 47/24
U.S. Cl. 198—240 7 Claims



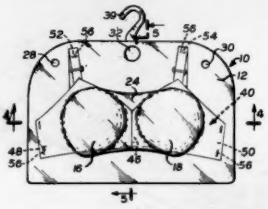
Apparatus comprising a conveyor provided with pairs of jaws arranged to take hold of the upper edges of the tea bags presented thereto in succession in a common plane, turn the tea bags around to an angular position with respect to said plane of presentation and deposit them in a column, for example, on a counter with the bags in parallel relation.

3,837,475
**STORAGE DEVICE FOR COINS AND SIMILAR OBJECTS**
Gerrit M. Bolanz, D-7858 Weil am Rhein, Baslerstr. 59, Baden-Wuurttemberg, Germany
Filed Nov. 29, 1971, Ser. No. 202,863
Int. Cl. A45c 11/28; B65d 21/02
U.S. Cl. 206—.8 3 Claims



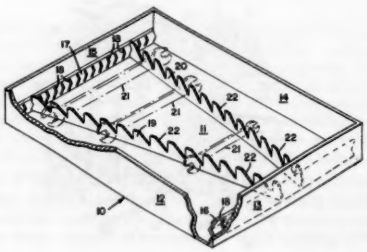
Storage device or container for coins of any shape and size or similar objects, which allows e.g. coins irrespective of diameter, thickness and shape, to be stored rigidly and automatically centered. In such a storage container, the object is sealed so as to be fully visible without the risk of oxidation. This enables the coins to be moved without the need for manual contact. The container so designed in accordance with the invention as a unit together with the stored article contained therein on the container principle and can be joined and changed on the unit construction principle. The invention is a unit construction system comprising the structural elements which are the object of the invention, provided on the external narrow sides with matching transverse or longitudinal sections, consisting of two matching container parts and provided on the inside with counteracting flexible rods of a special design.

3,837,476
**BRASSIERE DISPLAY PACKAGE**
Marcus Schwartz, 1275 15th St., Forest Hills, N.Y. 07024
Filed Jan. 15, 1973, Ser. No. 323,938
Int. Cl. B65d 65/16, 85/18, 85/62
U.S. Cl. 206—45.34 18 Claims



A display package for a brassiere wherein the brassiere is disposed between transparent sheet members that are secured together. The sheets are formed having a pair of laterally spaced cup-like portions that are in nested relation to each other, with the brassiere cups interposed between the respective pairs of nested cup-like portions. The construction is such that the brassiere cups are in laterally tensioned relation to each other with the cups in an outwardly distended condition to simulate the condition of such a brassiere when it is worn by the wearer.

3,837,477
**DRAWER ARRANGER**
Donald A. Boudreau, 1390 Linton St., San Leandro, Calif. 94577
Filed Jan. 31, 1972, Ser. No. 222,115
Int. Cl. B65d 1/34, 85/20
U.S. Cl. 206—72 8 Claims

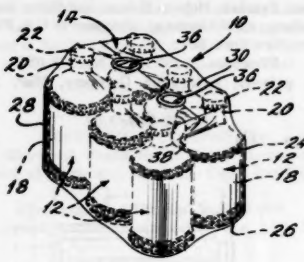


There is disclosed a device for holding a set of tools in a drawer, which includes two notched strips having notches spaced and shaped to receive the tools and hold them out of contact with each other and slotted spacing members in contact with opposite interior vertical faces of the drawer receiving opposite ends of each notched strip in a slot thereby holding the strips with predetermined spacing, vertically with their notched edges up.

## 3,837,478
## STRETCHABLE PACKAGING DEVICE FOR CONTAINERS

**Ernest R. Cunningham, Libertyville, Ill., assignor to Grip-Pak, Inc., St. Louis, Mo.**

**Continuation-in-part of Ser. No. 27,854, April 30, 1970, abandoned. This application July 29, 1971, Ser. No. 167,385**
**Int. Cl. B65d** *65/04, 65/16, 75/26*
**U.S. Cl. 206—427** **9 Claims**

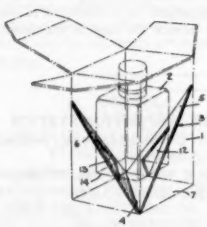



Stretchable and elastic packaging devices are disclosed herein wherein the packaging devices include a wraparound skirt adapted to be stretch mounted in elastic embracing and gripping engagement relative to articles, and an integral top adapted to overlie the articles when the packaging device is assembled thereto.

## 3,837,479
## MEANS FOR FIXING AN OBJECT IN ITS PACKAGING CONTAINER

**Myrtil B. Lehmann, Neuilly-sur-Seine, France, assignor to Chanel, Inc., New York, N.Y.**

**Filed Mar. 11, 1971, Ser. No. 123,226**
**Int. Cl. B65d** *85/30*
**U.S. Cl. 206—489** **3 Claims**



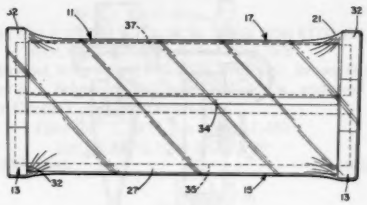
An insert for fixing an article such as a bottle within a packaging container having a bottom wall and side walls to prevent the article from rocking. The insert is formed by a piece of flexible sheet material having two bent flaps which bear against the bottom and side walls of the container and are inclined relative to the side walls. The flaps have openings therein which so accomodate portions of the article as to maintain the position of the article within the container.

## 3,837,480
## WIDE LINE RIBBON PACKAGE

**Peter F. Brunett, Monroe, N.Y., assignor to Burroughs Corporation, Detroit, Mich.**

**Filed Dec. 26, 1972, Ser. No. 318,200**
**Int. Cl. B65d** *85/66*
**U.S. Cl. 206—497** **13 Claims**

A package for wide, thin film printer ribbon including a pair of generally butterfly-shaped end pieces of substantially uniform thickness having integral bosses extending orthogonally and inwardly therefrom with a groove surrounding each boss for press fitting thereinto the open ends of a ribbon supply roll and a ribbon leader roll, a span of the ribbon being exposed between the two spaced-apart rolls. The depth of the grooves for the leader roll is less than that for the supply roll or alternately grooves may encircle only the supply roll bosses so that the end pieces angle away from the lead portion of the ribbon exposed between the rolls whereby the edges of the exposed span of film do not touch the end pieces. A heat-shrinkable overwrap encompasses the package, and the end pieces have break open cavities in their outer walls.




## 3,837,481
## SEPARATION OF TOBACCO FINES FROM SAND

**George E. Stungis, St. Matthews; Steve L. Merker, Louisville, both of Ky., and Norman D. Heitkamp, Jeffersonville, Ind., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.**

**Filed July 27, 1971, Ser. No. 166,635**
**Int. Cl. B03b** *1/02*
**U.S. Cl. 209—4** **5 Claims**

Tobacco fines, mixed with sand, are puffed employing microwave energy to a size at least sufficient to be used directly in cigarette manufacture and are then separated from the sand for use in tobacco products. Other botanicals may be similarly treated.

## 3,837,482
## PROCESS FOR PURIFYING CLAY BY SELECTIVE FLOCCULATION

**John J. Sheridan, III, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.**

**Filed May 3, 1973, Ser. No. 356,763**
**Int. Cl. B03d** *3/06*
**U.S. Cl. 209—5** **10 Claims**

An improved method for purifying kaolin clay containing colored impurities by forming a deflocculated aqueous slip of the impure clay and selectively flocculating the clay phase with an anionic polymeric flocculant, such as partially hydrolyzed polyacrylamide. A suspension of the impure clay is rendered strongly alkaline by addition of a soluble hydroxide compound before adding a strong polyanionic clay dispersant such as sodium silicate or sodium condensed phosphate to deflocculate the suspension. Thereafter the pH of the suspension is reduced to a neutral of mildly alkaline value. This is followed by incorporation of the anionic polymeric flocculant which selectively flocculates the clay, leaving the impurities deflocculated.

**3,837,483**

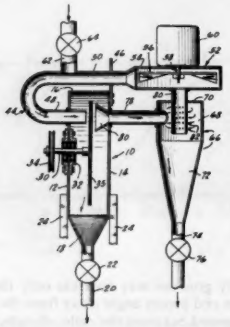
## SIFTERS FOR GRAIN AND CHEMICAL INDUSTRIES

**Heinrich A. Noll, 70 Nottingham Rd., Springfield, Ill. 62704**

**Filed Mar. 22, 1973, Ser. No. 343,909**

**Int. Cl. B07b** *9/00*

**U.S. Cl. 209—30** **2 Claims**



A sifter or separator particularly for use in connection with grain milling machines provides for continuous circulation of air along a closed pathway within the apparatus. The material to be sifted is introduced in said circulatory stream of air at one point thereof, while the coarse portion of the material is removed from said stream by impingement against a rotary screen which permits finer particles of the material to pass into a cyclone where they are removed from the air stream by centrifugal action and gravity. Inlet and outlet valves are of the type which when operated permits passage of the material while at the same time substantially preventing passage of air regardless of operative position.

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**3,837,484**

## MAIL SORTING SYSTEM

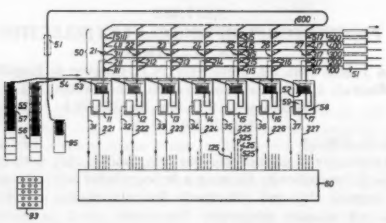
**Werner Ruckebier, and Hermann Schorpp, both of Constance, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany**

**Filed Oct. 30, 1973, Ser. No. 411,172**

**Claims priority, application Germany, Oct. 31, 1972, 2253384; Oct. 31, 1972, 400012**

**Int. Cl. B66c** *17/06;* **B41f** *; G08b 21/00*

**U.S. Cl. 209—73** **14 Claims**



In a mail sorting system in which mail items are routed from a number of distributing stations to appropriate, essentially parallel conveying channels, the stations being spaced along the channels and each item being fed to a selected channel on the basis of its destination address, overloading of a channel is indicated by providing an electrical simulation of the distribution at each moment of items along each channel, the simulation being in response to routing signals from the stations, and by producing an alarm signal when the simulation shows that more than a predetermined number of items are present in a selected length of any one channel upstream of its junction with at least the last station, taken in the direction of conveyance along the channels.

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**3,837,485**

## AUTOMATIC SORTING DEVICE

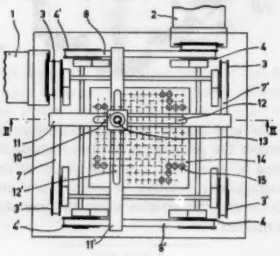
**Hans Otten, Reinbek; Helmut Heinze, and Heinz Muller, both of Hamburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Mar. 5, 1973, Ser. No. 338,082**

**Claims priority, application Germany, Mar. 24, 1972, 2214416**

**Int. Cl. B07c** *3/02*

**U.S. Cl. 209—74 R** **15 Claims**



The invention relates to a device for the automatic sorting of measured components according to ranges of the measured values. A sorting tray is provided for each range of values. A measurement causes positioning of a supply device by movement in one or more steps in the X and Y directions. Each measured component is conveyed to the sorting tray associated with its measured value. The step-wise movement of the supply device is produced either by means of two stepping motors or by rotary magnets the movement of which is transmitted to the supply device through a mechanical coupling system.

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**3,837,486**

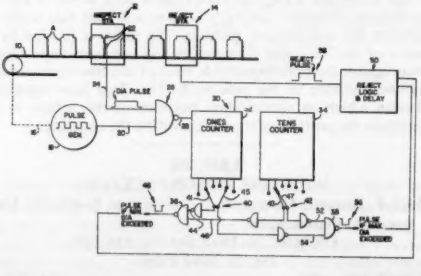
## ARTICLE INSPECTION SYSTEM

**Edward Boyd Gardner, Bloomfield, Conn., assignor to Emhart Corporation, Bloomfield, Conn.**

**Filed July 9, 1973, Ser. No. 377,807**

**Int. Cl. B07c** *5/342*

**U.S. Cl. 209—111.7** **7 Claims**



At least one light beam is directed across a continuously moving conveyor toward a light sensitive device arranged on

the opposite side of the conveyor, and circuitry is provided in association with the light sensitive device to provide a "diameter" pulse proportional in real time to the width or diameter of the article passing along the conveyor. A pulse generator provides a train of pulses proportional in frequency to the speed of the conveyor and hence to the speed of the articles moving thereon. NAND gate means clips the train of pulses providing a series of pulses with a total time span corresponding to the real time duration of the "diameter" pulse. A counter receives these pulses, and has preset minimum and maximum values, which values when exceeded will generate "yes" and "no" pulses to logic circuitry for operation of a reject device downstream of the light beam for removing an article from the line when it does not meet predetermined standards.

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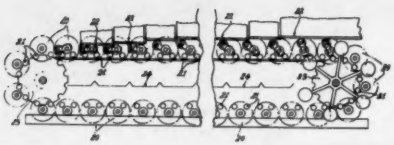
**3,837,487**

## FRUIT SIZING EQUIPMENT

**Robert F. Sherwood, Parow North, South Africa, assignor to Bradwood (Proprietary) Limited, Cape Province, South Africa**

**Filed Aug. 23, 1973, Ser. No. 390,685**
**Claims priority, application South Africa, Aug. 25, 1972, 72/5856**
**Int. Cl. B07b *13/04***
**U.S. Cl. 209—106** **4 Claims**



Sizing apparatus for particular application in fruit sizing comprises a plurality of elements adapted for rotation and arranged in line and also laterally in banks to form an endless conveyor system, the elements being shaped convexly in planes at right angles to their axes of rotation and concavely in longitude such that a substantially circular aperture is formed between any two elements adjacent in line, which aperture increases in size when the elements are rotated and remains substantially circular.

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**3,837,488**

## SEPARATION OF MICA FROM CLAY BY FROTH FLOTATION OF CLAY

**David C. Yang, Edison, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.**

**Filed Aug. 1, 1972, Ser. No. 277,134**
**Int. Cl. B03d *1/06***
**U.S. Cl. 209—167** **3 Claims**

Mica, present as an impurity in kaolin clay, is removed from the clay particles by stage-wise froth flotation of the clay in a dispersed alkaline pulp, using as a collector for the clay a complex phosphate ester of a nonionic surfactant of the ethylene oxide-adduct type.

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**3,837,489**

## MOLYBDENUM DISULFIDE FLOTATION ANTIFOAM

**Raymond J. Michalski, Riverdale, and John T. Cantwell, Oak Lawn, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.**

**Filed Nov. 24, 1972, Ser. No. 309,013**
**Int. Cl. B03d *1/06***
**U.S. Cl. 209—167** **5 Claims**

An antifoam and process for the separation of molybdenum values associated with predominantly copper ores of the sulfide type. The antifoam, which is primarily directed to laundering or cleaning stages in the moly cycle, consists of a utilization of 1–60 ppm of a polyoxyethylene glycol ester in a hydrocarbon diluent per ton of ore. The oxyethylene fraction has a value of about 100–2,000 and an optimum value of 400, and the fatty acid fraction is selected from $C_{14}$ – $C_{22}$ acids. A preferred antifoam is polyethylene glycol 400 dioleate (P.E.G. 400 dioleate) in kerosene or isoparaffin oil as the diluent. HLB values for the P.E.G. antifoam range from 5–12 with a preferred value of 5–10 for the dioleate.

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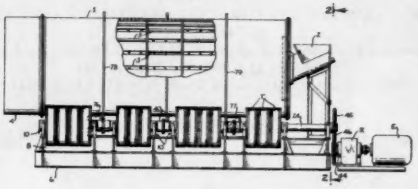
**3,837,490**

## ROTATABLE DRUM TYPE SCRUBBER FOR STONES, ROCKS, GRAVEL, AND THE LIKE

**Carl D. Driebel, Milwaukee; Ronald B. Dediemar, Brown Deer, and Leroy J. Schuman, Milwaukee, all of Wis., assignors to Barber-Greene Company, Aurora, Ill.**

**Filed Dec. 3, 1973, Ser. No. 421,407**
**Int. Cl. B07b *1/24*; B03b *3/10***
**U.S. Cl. 209—288** **4 Claims**



A rotary washer for crushed stone and the like and for scrubbing the stones to eliminate clay, dirt and soft stones and of the type having a hollow rotary drum which is rotated about a generally horizontal axis. The drum is rotatably supported by rubber tire wheel assemblies and in such a manner that the tires can be individually removed for repair, replacement or the like and without dismantling all of the other wheel assemblies or other parts of the rotary mounting means. The scrubber also includes double tapered roller anti-friction bearing assemblies of the pre-seal type and which are used to rotatably support the shafts on which the rubber tire wheel assemblies are mounted.

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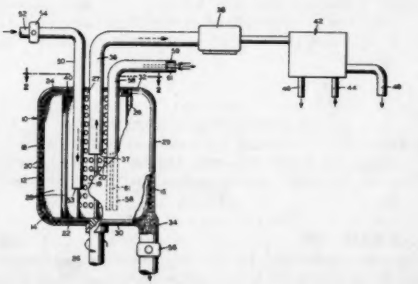
**3,837,491**

## LIQUID PURIFICATION APPARATUS AND PROCESS

**Gerald Francis Humiston, South Barre, and Barton Lester Cotton, Barre, both of Vt., assignors to Pollution Control Inc., South Barre, Vt.**

**Filed Nov. 3, 1972, Ser. No. 303,425**
**Int. Cl. B01d *33/06***
**U.S. Cl. 210—73** **7 Claims**



A method for the continuous mechanical purification of a liquid containing solid and dissolved pollutants includes

charging a liquid chamber with polluted liquid and simultaneously subjecting the polluted liquid to centrifugal separation and vacuum distillation. The centrifugal separation effects the removal of said pollutants from the chamber and exposes a greater surface of relatively pure liquid for the vacuum distillation.

The purification apparatus is comprised of a stationary housing, a generally cylindrical and circumferentially perforated screen member concentrically disposed within the housing, and vanes within the screen member mounted for rapid rotation about the axis thereof to cause liquid therein to be centrifuged. Vacuum means for applying vacuum to the liquid within the screen member communicates with the screen member through a vapor outlet in the housing while liquid inlet means and sludge outlet means located in the housing provide, respectively, for the charging of polluted liquid into the screen member and the removal of the sludge from the housing.

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**3,837,492**

**ROTATING FILTER FOR WASTEWATER BIOLOGICAL PURIFICATION**

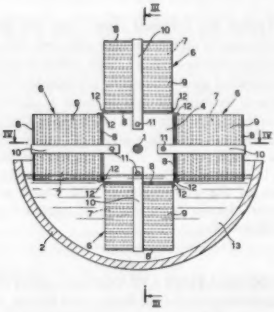
**Carmine Di Bello, Via Negroponte 11-Lido, Lido Venezia, Italy**

**Filed Dec. 22, 1972, Ser. No. 317,787**

**Claims priority, application Italy, July 11, 1972, 084132-A/72**

**Int. Cl. B01d** *25/00*

**U.S. Cl. 210—150** **3 Claims**



The invention relates to a rotating filter for wastewater biological purification. The filter comprises at least one pack of parallel channels that are open at their extremities. The pack is rotated in the direction of development of the channels, so that it is periodically in contact with the wastewater and then with the atmospheric oxygen. As a consequence of this construction of the filter, its purifying capability is improved greatly.

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**3,837,493**

**SEWAGE TREATMENT APPARATUS**

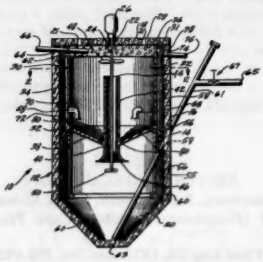
**Ye-Shih Lin, 213 W. Scenic Dr., Monrovia, Calif. 91016**

**Continuation-in-part of Ser. No. 124,790, March 16, 1971, Pat. No. 3,753,897. This application July 23, 1973, Ser. No. 381,536**

**Int. Cl. C02c** *1/08, 1/16*

**U.S. Cl. 210—197** **6 Claims**

A sewage treatment package plant receives incoming raw sewage and purifies it by performing an activated sludge process thereon. Oxygen for re-aeration of sludge in the stabilization and digestion stages of the process is supplied directly from aerated sewage in the aeration stage. The plant is of unitary structure and includes partition means to subdivide the interior into separate aeration, stabilization and sedimentation chambers with a separate digestion cavity being defined beneath the stabilization chamber. The sedimentation chamber has a volume sufficiently large to fully absorb the effects of shock loadings. Means are included for directing aerated sewage directly from the aeration chamber into the stabilization chamber and digestion cavity for re-aeration of the sludge.



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**3,837,494**

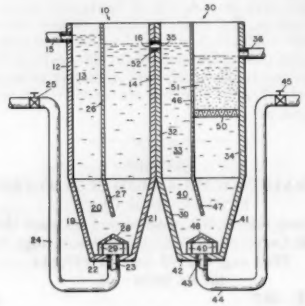
**SEWAGE TREATMENT APPARATUS**

**Bernard H. Stevenson, 1736 Linhart Ave., Fort Myers, Fla. 33901**

**Filed Aug. 16, 1972, Ser. No. 281,125**

**Int. Cl. B01d** *21/10, 29/00*

**U.S. Cl. 210—259** **3 Claims**



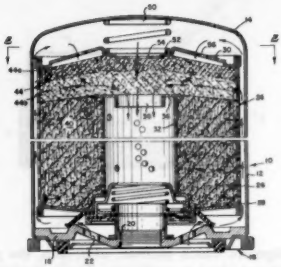
For use in a sewage treatment system, a settling tank and a filtering tank, each such tank having near its upper end an inlet and, at a slightly lower level, an opposite outlet, the outlet of the settling tank communicating with the inlet of the filtering tank, and each tank having in its nether region a section of downwardly progressively reducing cross section terminating in a floor provided with a central sludge withdrawal port. Each tank is provided with a downwardly extending baffle dividing its interior into two legs of unequal section communicating only near the tank floor; and the filtering tank having an upflow filter near the upper end of its outlet leg. A downwardly-flaring guard is concentrically suspended above each sludge withdrawal port and a lower section of each baffle is inclined to terminate above the apex of its associated guard substantially in the median vertical plane of the tank.

**3,837,495**

## LIQUID FILTERS

**Jesse A. Baldwin, Kearney, Nebr., assignor to J. A. Baldwin Manufacturing Company, Kearney, Nebr.**

**Filed Jan. 27, 1972, Ser. No. 221,304**
**Int. Cl. B01d** *27/04, 27/02*
**U.S. Cl. 210—314** **4 Claims**



A liquid (engine-lubricating oil) filter comprising a closed-ended can-type housing, one end closure having oil inlet openings and a centrally disposed oil outlet opening; and a filter element or cartridge mounted in coaxial relation within the housing and including an outer cylindrical screen closed top-and-bottom by end caps, an inner, smaller-diameter cylindrical screen (center tube) disposed coaxially within the outer cylindrical screen and disposed therewithin so that it terminates well short of the upper end cap of said outer cylindrical screen, a part-flow section filling the annular space between said center tube and said outer cylindrical screen for the full axial length of said center tube, said part-flow section comprising a form-sustaining winding of cotton filtering material, and a full-flow section substantially completely filling the cylindrical space within said outer cylinderical screen above said part-flow section, said full-flow section comprising a self-contained, form-sustaining disc provided by superimposed layers of non-absorbent rayon viscose filaments which been subjected to a crimping treatment and thereupon texturized and said layers being secured together in face engagement by means, such as needling, which does not substantially impede oil flowing axially through the layer interface, said full-flow section resting directly on and being supported substantially completely by said part-flow section.

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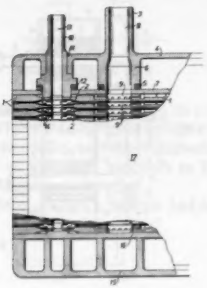
**3,837,496**

## DIALYSIS APPARATUS

**Olov Hagstrom, Lund, and Gerhard Riede, both of Eslov, Sweden, assignors to Gambro AG, Bern, Switzerland**

**Filed Apr. 2, 1973, Ser. No. 346,823**
**Claims priority, application Sweden, Apr. 26, 1972, 5474/72**
**Int. Cl. B01d** *31/00*
**U.S. Cl. 210—321** **5 Claims**

A dialysis apparatus, particulary for purifying blood includes an assembly of flat supporting plates stacked together with pairs of membranes interposed between the sides of adjacent plates. These membranes form passageways between them for the liquid to be purified, and other passageways are formed between each plate and the adjacent membrane for circulating the purifying liquid. The assembly of supporting plates and membrane pairs are traversed by tubular shafts for



the purifying liquid and these shafts include distributing disks which clamp the respective pairs of membranes to the adjacent support plate.

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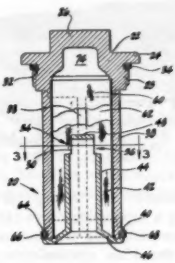
**3,837,497**

## FILTER ASSEMBLY

**Russell F. Smith, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.**

**Filed Aug. 14, 1972, Ser. No. 280,236**
**Int. Cl. B01d** *27/00*
**U.S. Cl. 210—349** **2 Claims**



A disposable fuel pump filter assembly for insertion into a valve enclosure includes a first air dome in one end. A second air dome in the other end is defined by a conduit through which fuel passes to and from a filter chamber, a seal surrounding the second end of the filter assembly, and the wall of the valve enclosure itself.

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**3,837,498**

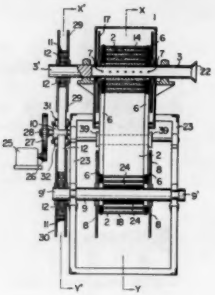
## AUTOMATIC FILTER

**Kyoji Ito, No. 4 Nishi Inzo-cho, Seto, Japan**

**Filed June 11, 1973, Ser. No. 369,090**
**Claims priority, application Japan, Feb. 20, 1973, 48-19750**
**Int. Cl. B01d** *33/02*
**U.S. Cl. 210—387** **5 Claims**

An automatic filter which is characterized in that a liquid permeable long filter belt is rolled onto an upper tubular shaft and a lower shaft, and said filter belt and said upper tubular shaft are encased in a filter box to receive the liquid to be filtered. During the filtration, the filtrate is passed through the core material of said filter belt to a plurality of small apertures

of said upper tubular shaft and discharged through said upper tubular shaft, while the filter cake is accumulated between the



layers of rolled filter belt, and after the filtration, said filter cake is discharged by unrolling said filter belt from said upper tubular shaft to said lower shaft.

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**3,837,499**

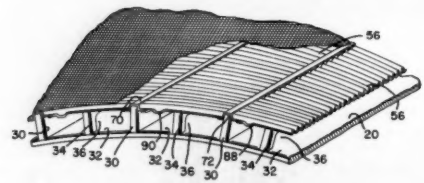
## DRUM STRUCTURE FOR ROTARY DRUM FILTERING APPARATUS

**Oscar Luthi, Nashua, N.H., assignor to Improved Machinery, Inc., Nashua, N.H.**

**Filed Mar. 29, 1971, Ser. No. 128,798The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.**

**Int. Cl. B01d** *33/06*

**U.S. Cl. 210—404** **19 Claims**



A drum structure for rotary drum filtering apparatus, comprising a supporting drum carrying rib elements defining filtrate compartments which extend generally longitudinally along the drum circumference, and corrugated cover elements mounted to the rib elements by clips to form a cover circumferentially around the supporting drum over the filtrate compartments. Each groove of the corrugations in the outer surface of each cover element communicates with a therebelow filtrate compartment through a louvered opening arranged to discharge liquid in a direction generally towards the discharge end of the communicating filtrate compartment; and one side of each corrugated element is spaced from the thereadjacent portions of the drum structure to permit lateral expansion of the cover elements.

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**3,837,500**

## DIAPHRAGM FOR INVERSE OSMOSIS AND METHOD OF MAKING SAME

**Louis Nicolas, Paris, and Richard Dick, Vert-le-Petit, both of France, assignors to Anvar-Agence Nationale de Valorisation, Paris, France**

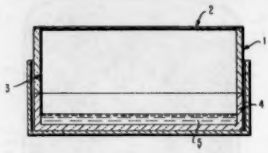
**Filed Apr. 16, 1971, Ser. No. 134,815**

**Claims priority, application France, Apr. 17, 1970, 70.13941**

**Int. Cl. B01d** *31/00*

**U.S. Cl. 210—490** **35 Claims**

The invention relates to a method of preparation of semipermeable diaphragms, especially for use in inverse osmosis and enabling substantially pure water to be extracted from aqueous solutions of dissolved substances of low molecular weight, such as sodium chloride, saccharose, etc. The diaphragms for inverse osmosis essentially consist of a film-producing polymer having a sufficient number of mobile hydrogen groups to give, after reticulation, compounds which are insoluble in water. The method covers the preparation of ultra-thin layers which can be employed for hyper-filtration purposes, and also includes the superficial reticulation of a dry



film of polymers which include, inter alia, the polyvinyl alcohols and polyvinyl pyrrolidone. The reticulation agent is preferably chosen from the di-isocyanates and may comprise a solvent for a swelling agent for the polymer and a catalyst for the reticulation reaction. An important feature of the invention is that the degree of reticulation of such diaphragms varies progressively throughout the thickness of the film, the most highly reticulated layer being a very thin superficial layer of the diaphragm.

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**3,837,501**

## SEPARATION DEVICE

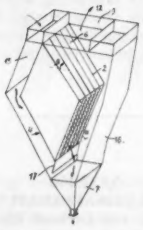
**Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex N.V., Krommenie, Netherlands**

**Filed Feb. 4, 1971, Ser. No. 112,620**

**Claims priority, application Netherlands, Feb. 6, 1970, 7001713; Mar. 27, 1970, 7004494**

**Int. Cl. B01d** *21/10*

**U.S. Cl. 210—522** **16 Claims**



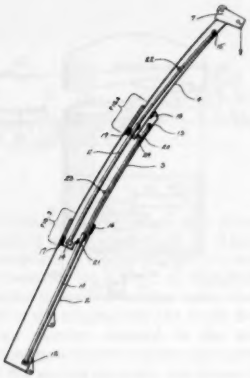
A device for separating components from a carrier liquid, comprising mutually parallel corrugated plates, troughs or similarly shaped surfaces, delimiting therebetween separation passages, the longitudinal axes of which corrugations or the like which determine the direction of removal of the separated components include an angle with the direction of the supply and discharge flow of the liquid, in order to obtain an optimal separation between the liquid flow and the flow of the separated components to be removed from the device.

3,837,502

## LIGHT WEIGHT BOOM CONSTRUCTION

John T. Hornagold, Waukesha, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Mar. 12, 1973, Ser. No. 340,018
Int. Cl. B66c 23/04
U.S. Cl. 212—55 8 Claims



A truck mounted crane has a three-part, extensible boom in which telescopic motion is accomplished by a pair of extension cylinders contained within the boom. Frictional forces between the slidably mounted boom sections are minimized by improved pad assemblies positioned at selected bearing points. Support members in the form of rollers are positioned within the boom immediately above the lower extension cylinder to not only prevent the extension cylinder from buckling under full load conditions, but to support the outer boom section when it is retracted inward. The result is a reduction in the size and weight of the extension cylinders and a consequent reduction in boom weight.

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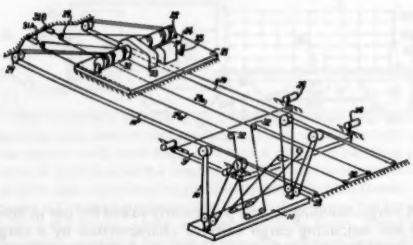
3,837,503

## HOISTING DEVICE FOR USE WITH CRANES

Toshiro Komatsu, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1972, Ser. No. 246,745
Claims priority, application Japan, Apr. 27, 1971, 46-34062
Int. Cl. B66c 19/00
U.S. Cl. 212—83 1 Claim



A trolley is provided in a set of two or more hoisting pulleys or sheaves on one side and another set of two or more hoisting pulleys or sheaves on the other side carried by a trolley frame which travels along a horizontal girder are so arranged as to mechanically move toward or away from each other, so that the loading and unloading of a cargo in a narrow space may be effected.

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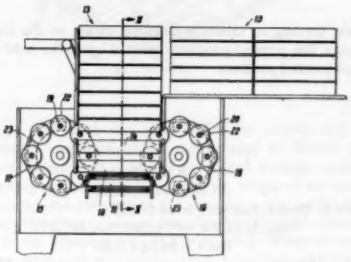
3,837,504

## DEVICE FOR LIFTING CONTAINERS IN CONNECTION WITH A PACKING MACHINE

Heinz Focke, Verden/Aller, and Hugo Mutschall, Kreis Verden/Aller, both of Germany, assignors to Focke & Pfuhl, Verdan/Aller, Germany

Filed Mar. 26, 1973, Ser. No. 344,662
Int. Cl. B65g 57/30
U.S. Cl. 214—6 BA 6 Claims



Apparatus is described for stacking a plurality of containers upon removal from a conveyor. The stacking apparatus comprises a wheel located at each side adjacent one end of the conveyor, each wheel having a plurality of rods slidingly affixed thereto adjacent the periphery of the wheel. As the wheels are rotated, a rod engages each side of a container or plurality of containers to lift them from the container. Further rotation causes the rods to eventually become disengaged from the containers. The thus raised containers are then supported by those containers raised by subsequent rods.

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3,837,505

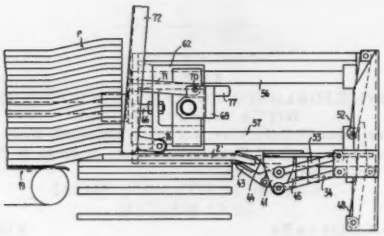
## APPARATUS FOR FORMING PACKAGES FROM CONTINUOUSLY INCOMING PRINTED PRODUCTS OR THE LIKE

Sergio Muggli, Wetzikon, Switzerland, assignor to Fehr & Reist AG, Hinwill, Switzerland

Filed May 1, 1973, Ser. No. 356,136
Claims priority, application Switzerland, May 19, 1972, 7463/72
Int. Cl. B65g 60/00
U.S. Cl. 214—6 BA 10 Claims

An apparatus for forming packages from continuously arriving or incoming printed products or the like, wherein a bottomloaded stacker follows an infeed mechanism for the printed products. A controlled deflecting element is provided at the course or line of the infeed mechanism or the stacker and this deflecting element is effective transversely with respect to the momentary conveying direction in order to place individual printed products into a laterally shifted or offset position with respect to the remaining printed products. A controlled gripper is provided in operable association with the stacker for the purpose of temporarily holding the laterally

shifted printed product. Above the gripper there is arranged an ejector controlled to operate in-phase as the gripper, this



ejector serving to laterally displace away, in the form of a package, the printed products located upon the held laterally shifted printed product.

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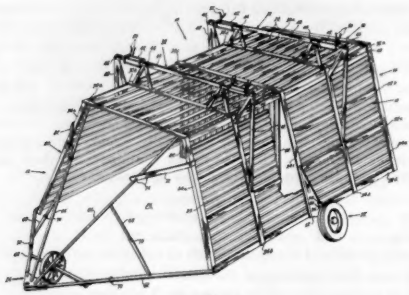
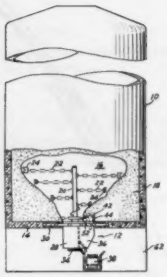
**3,837,506**
**STACK FORMER**
**Melvin E. Dreier, Dumont, Iowa 50625**
**Filed Sept. 14, 1973, Ser. No. 397,271**
**Int. Cl. B65g** *57/00*
**U.S. Cl. 214—9** **10 Claims**



A frame structure having a top and sides but no bottom or ends receives blown roughage materials such as corn and hay silage, dry hay, corn stalks and the like and serves as a form to create a stack of silage formed directly on the ground. The frame is wheel mounted at the sides with such sides being hinged at the top so that they can be moved outwardly at the bottom at an incline to the top for stack forming and can be in a vertical position for transportation through gates and over bridges and roads. Movement of the sides is preferably by hydraulic power and the axles of the wheels are rotatable 90° so the wheels can be properly oriented to the direction of movement of the sides when being extended or for forward travel. A baffle plate hingedly depends from the top between the sides to intercept blown roughage and cause it to fill the former which, when filled, can be pulled forwardly by a tractor with the baffle swinging up to ride over the top of the stack. The stack may be of any desired length and is uniform in shape.

**3,837,507**
**ADJUSTABLE BOTTOM DISCHARGE FOR SILO**
**James W. Lepley, Smithville, and John E. Stoltzfus, Apple Creek, both of Ohio, assignors to Flying Dutchman, Inc., Smithville, Ohio**
**Filed Feb. 20, 1973, Ser. No. 333,474**
**Int. Cl. B65g** *65/48*
**U.S. Cl. 214—17 D** **13 Claims**



Adjustable discharge means mounted adjacent the bottom of a silo having a discharge opening therein and including a shield member over said discharge opening to prevent clogging thereof, one side of the shield member being open for the admission of material to be discharged therethrough, movement of said material in discharged direction being controlled by a baffle member movable relative to the open side of the shield member and also adapted to close said opening at the completion of a discharge operation. The baffle member is adapted to be adjusted from the exterior of the silo for safety to the operator and minimizing the possibility of ambient air passing into the silo through said discharge opening.

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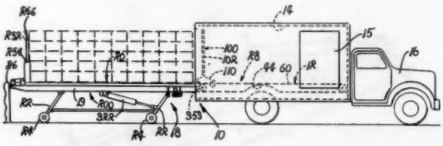
**3,837,508**
**CARGO HANDLING SYSTEM**
**William L. Stefanelli, 1945 W. Yale, Fresno, Calif. 93721**
**Continuation-in-part of Ser. No. 38,155, May 18, 1970, Pat. No. 3,688,926. This application Apr. 19, 1972, Ser. No. 245,479**
**Int. Cl. B60p** *1/36*
**U.S. Cl. 214—83.22** **4 Claims**



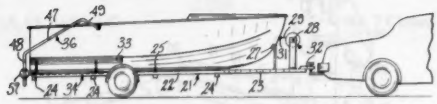
A cargo-handling system particularly suited for use in loading and unloading cargo carriers, characterized by a cargo conveyor for positioning cargo at selected and convenient locations within a carrier, such as a truck, and a cargo delivery transport including a delivery conveyor for delivering cargo to and from the cargo positioning conveyor, whereby the efficiency and economy of cargo-handling operations are enhanced.

3,837,509

## BOAT ALIGNMENT APPARATUS FOR ATTACHMENT TO BOAT TRAILER

Ronald C. Gladnick, Smithtown, N.Y., assignor to Compass Holding Corporation, New York, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,618
Int. Cl. B60p *1/46*
U.S. Cl. 214—84 13 Claims



Apparatus attachable in pairs to rear portions of a boat trailer for guiding a boat onto or off the trailer, wherein the apparatus comprises an elongated rigid first member attachable to the chassis of the trailer; an elongated rigid second member coupled to the first member transversely thereof and pivotable about the longitudinal axis of the first member; an arm-like third member coupled to the second member generally transversely thereof and pivotable about the longitudinal axis of the second member; and means for locking the members at predetermined positions relative to one another.

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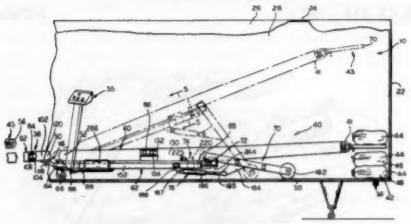
3,837,510

## METHOD OF LOADING BAGGED MAIL FROM A LOADING DOCK INTO A HIGHWAY VEHICLE

Joseph E. McWilliams, 1345 Canterbury Ln., Glenview, Ill. 60025

Division of Ser. No. 108,500, Jan. 21, 1971, Pat. No. 3,717,263. This application July 17, 1972, Ser. No. 272,477
Int. Cl. B65g *57/11*
U.S. Cl. 214—152 1 Claim



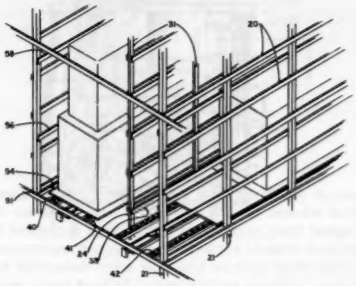
The invention relates to the loading of mail bags from a loading dock into an end loading highway vehicle to fully load the vehicle with mail bags, in which a mail bag handling conveyor is provided with a single bar width conveyor section carried by and extending longitudinally of a wheeled frame. The conveyor section projects cantilever fashion from the forward end of the frame, which is supported at its forward end by a swingably mounted leg that is movable between lowered and upright positions to vary the elevation of the discharging forward end of the conveyor section. The conveyor section is swingably connected to the frame at its rearward end, and its forward end rests on a slide bar arrangement for shifting from side to side to facilitate bag stacking or piling.

3,837,511

## METHOD OF LOADING AND UNLOADING ARTICLES IN A STORAGE APPARATUS

Newel Howlett, 1401 Hillside Pl., Las Vegas, Nev. 89104

Division of Ser. No. 191,947, Oct. 22, 1971. This application Feb. 9, 1973, Ser. No. 331,018
Int. Cl. B65g *1/06*
U.S. Cl. 214—152 3 Claims



An improved apparatus and method for storing and handling articles and particularly refrigerated or frozen foods comprises a series of adjacent elongated storage compartments having rollers extending along the length of the bottom of each compartment on which rollers lie a row of flat plates which may be advanced along the rollers and on the upper surface of which plates materials are stacked. Plate advancing means are provided by a guided shaft extending substantially along the length of each compartment which shaft has attached thereto a series of catch members for contacting catch member receiving or stop means located on the underside of each of the plates; an operator advances the row of plates toward one end of the compartment by pulling the end of the shaft.

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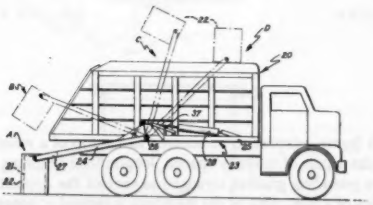
3,837,512

## REFUSE TRUCK CONTAINER HANDLING MECHANISM

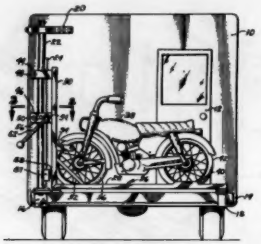
Donald C. Brown, Box 194, Botkins, Ohio 45306

Filed Oct. 30, 1973, Ser. No. 410,983
Int. Cl. B65f *3/02*
U.S. Cl. 214—302 8 Claims



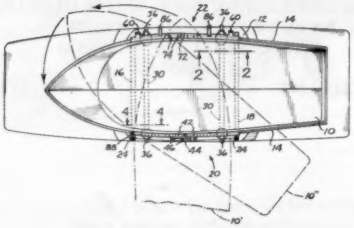
A power-operated pivotal arm mechanism for moving refuse containers through a long arcuate path between a rear lowered container loading position and a forward inverted container washing position features a sliding link and fixed guide means therefor for imparting to the arms of the mechanism the required arc of movement.

3,837,513
**MOTORBIKE LOADER-CARRIER**
Victor Adamek, 1210 Opal St., San Diego, Calif. 92109
Filed Aug. 31, 1972, Ser. No. 285,199
Int. Cl. B60r 9/00
U.S. Cl. 214—450 7 Claims



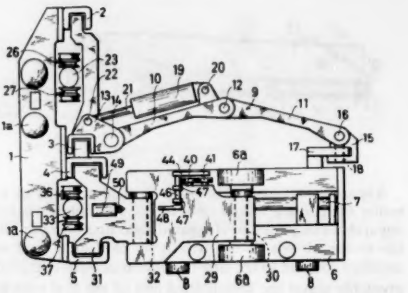
A motorbike loader-carrier on the rear of a camper vertically movable for loading and unloading and horizontally swingable while loaded to permit access to the rear storage compartment or door of the camper.

3,837,514
**BOAT CARRIER FOR VEHICLES**
Reno R. Barnes, 3420 Crestview Dr. South, Salem, Oreg. 97302
Filed Nov. 20, 1972, Ser. No. 308,290
Int. Cl. B60r 9/00
U.S. Cl. 214—450 6 Claims



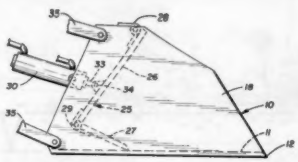
A frame, adapted to be secured to the top of a vehicle, includes a pair of laterally spaced, longitudinal retaining members providing grooves arranged to receive the opposite gunwales of a boat. One of the members is formed of hinged sections arranged to be secured together releasably in gunwale-retaining position. Associated with the hinged sections is a cam member which functions, during closing of the hinged sections, to push the boat toward the opposite groove for entry therein of the associated gunwale. Upon opening of the hinged sections, the cam member functions to elevate the associated side of the boat and to retract the opposite gunwale from its associated groove.

3,837,515
**INDUSTRIAL TRUCK**
Shuji Ohta, Toyohashi, Japan, assignor to Toyota Automatic Loom Works, Ltd., Aichi-ken, Japan
Filed Sept. 20, 1972, Ser. No. 290,469
Claims priority, application Japan, Sept. 20, 1971, 46-073188
Int. Cl. B66f 9/14
U.S. Cl. 214—730 9 Claims



An industrial "fork-lift" truck comprises a guide means, a load support means, and a pair of connecting means which support said load support means slidably along said guide means, rigidly by a novel connecting means having at least a line and a point support, and swingably only at each end of said guide means, by means of a novel hydraulic system which is controlled by a simple lever with a help of a few unique control valves.

3,837,516
**LOADER BUCKET WITH EJECTOR**
Gustave Meyer, Northglenn, Colo., assignor to Irvin L. Stumpf, Wheat Ridge and Raymond R. Primozich, Westminster, both of, Colo., part interest to each
Filed June 9, 1972, Ser. No. 261,386
Int. Cl. E02f 3/70
U.S. Cl. 214—767 3 Claims



An ejector bucket for mounting on a front end loader or backhoe loader vehicle, provided with an ejector actuated by mechanism carried on the bucket. The ejector comprises two flat plates hingedly connected together, the upper plate being hinged to the forward edge of the top wall of the bucket. In their rearward retracted position, the ejector plates form an acute angle within the rearward portion of the bucket and close openings in the stationary frame-like rear wall and bottom of the bucket, whereby the structure as a whole is lightened. In their forward discharging position the hinged ejector plates are in a substantially single plane. The ejector actuating mechanism includes an hydraulic cylinder pivotally mounted on supports extending across the rear wall opening, and a piston pivotally connected to the upper ejector plate, whereby a short power stroke actuates the ejector for

complete discharge of the contents without tilting the bucket, thus permitting operation within restricted areas.

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**3,837,517**

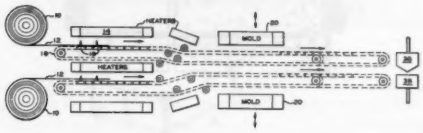
## MOLECULARLY ORIENTED HOLLOW ARTICLE, SUCH AS A BOTTLE

**Edward C. Held, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.**

**Division of Ser. No. 90,576, Nov. 18, 1970, Pat. No. 3,709,967. This application Sept. 6, 1972, Ser. No. 286,687**

**Int. Cl. B65d** *23/00;* **B29c** *17/04;* **B29b** *5/04;* **B32b** *1/04;* **B27c** *27/00*

**U.S. Cl. 215—1 C** **7 Claims**




Hollow articles are fabricated from two flat sheets by passing said sheets through a heating zone to heat same to orientation temperature, and thence advancing said sheets between two mold halves. The mold halves are then brought together and differential fluid pressure causes the sheets to conform to the shape of the respective mold halves, the sheets being sealed around the peripheral edges of the mold.

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**3,837,518**

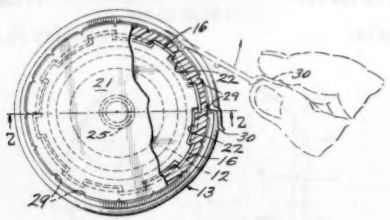
## TAMPER-PROOF AND CHILD-PROOF MEDICINE BOTTLE OR THE LIKE

**Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.**

**Filed Nov. 30, 1972, Ser. No. 310,998**

**Int. Cl. A61j** *1/00;* **B65d** *55/02*

**U.S. Cl. 215—7** **4 Claims**




A tamper-proof and child-proof closure for a medicine bottle or the like. The closure consists of an inner cap having threads on its inner surface mating with threads on the bottle neck and an outer overcap enclosing the inner cap and normally rotatable relative thereto. Co-operating clutch means on adjacent surfaces of the inner and outer caps are engageable for unscrewing the inner cap by moving at least part of the overcap axially toward the bottle and then rotating the overcap. The overcap has a removable skirt on its lower edge which initially engages the bottle shoulder near the neck to prevent the overcap from being moved into clutch engaging position until after the skirt has been removed.

**3,837,519**

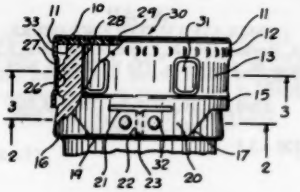
## CONTAINER CLOSURE WITH OPENING INDICATORS

**Walter Merton Perry, 76 Locust Hill Rd., Darien, Conn. 06820**

**Filed Jan. 16, 1973, Ser. No. 324,083**

**Int. Cl. A61i** *1/00;* **B65d** *55/02*

**U.S. Cl. 215—7** **14 Claims**




A tamper indicating closure for containers having a threaded section below the mouth and an annular locking shoulder below the threads, in which two or more tamper indicator extensions project down from the closure main body, and have horizontal cross slots and vertical score lines and their lower edges hooked to the locking shoulder, and such that the score lines rupture when the closure is removed. Score lines may be notched at the ends to provide rounded corners and projecting bosses shield the sharp edges. Alternative design comprises complete circle of rectangular segments below a ring of horizontal slots, and with the segments defined by vertical score lines extending from the lower edge up to bisect the wall material between adjacent slots, thus providing firm anchorage of upper corners of all segments after rupture of score lines. The preformed cup for the closure, prior to threading, is made with spaced depressions around the cylindrical side wall to provide concentric alignment of closure top panel and gasket on mouth during sealing and threading. Alternatively depression in top panel provides improved centering. Advantages of closure include less material and lower cost, more positive tamper indication, impossible to restore after tampering, free of sharp corners and sharp edges that cut fingers. A torquing mechanism is provided in the bottling line to insure uniform removal torque. Improvements apply to both pre-threaded and threaded-on-neck types of closures in ductile metal or plastic.

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**3,837,520**

## CONTAINER, ESPECIALLY FOR AGRICULTURAL PRODUCTS

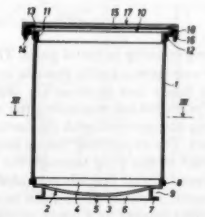
**Jan Freudendahl, Lyngby, Denmark, assignor to Jens Axel Freudendahl, Sonderborg, Denmark**

**Filed Mar. 6, 1973, Ser. No. 338,718**

**Claims priority, application Denmark, Mar. 7, 1972, 1048/72**

**Int. Cl. B65d** *89/08*

**U.S. Cl. 220—1.5** **5 Claims**




The invention consists in a container which is built up of a tube which is open in both ends and bottom end cover means

which close the tube air-tightly and constitutes foot means for the container, the top end of the tube being air-tightly closed by top cover means. The bottom cover means are adapted to engage fork-shaped lifting means on a fork lift truck. The container is very cheap to manufacture and has a low weight. The container is easy to detach and to stow away.

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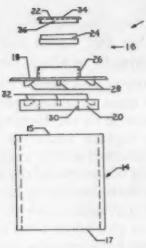
**3,837,521**
**INSULATED METER ENCLOSURE**

**Richard A. Huston, 1009 N. Edgemoor, Wichita, Kans. 67207, and Leroy W. McQueary, 210 N. Walnut, both of Wichita, Kans. 67203**

**Filed Jan. 10, 1972, Ser. No. 216,466**
**Int. Cl. H02g 3/08**
**U.S. Cl. 220—3.3** **7 Claims**



An insulated meter enclosure has a sidewall of insulative material and a cover of insulative material portions. The meter enclosure mounts in the ground and utilizes a conventional meter box lid structure to which insulating portions are attached.

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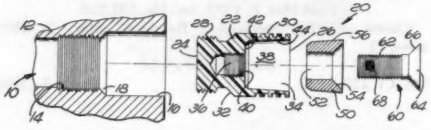
**3,837,522**
**MULTIPLE RETENTION PLUG FOR SEALING OPENINGS IN METAL PARTS**

**Michael Lesnansky, Jr., Sylmar, Calif., assignor to Textron, Inc., Providence, R.I.**

**Filed Oct. 9, 1973, Ser. No. 404,543**
**Int. Cl. B65d 39/12**
**U.S. Cl. 220—24.5** **7 Claims**



A plug for sealing opening in metal parts. The plug includes screw threads for engagement with threads in the metal parts and also includes lands and grooves on the outer surface thereof. Means is provided for expanding the outer surface of the plug into sealing engagement with the surface of the opening in the metal part. The expanding means is a pin forced into an opening provided in the plug through the utilization of a screw, which engages interior threads provided in the opening of the plug. The screw remains in position so as to retain the expanding pin against release as a result of vibrations. An alternative embodiment discloses a ball which is pressed into a small diameter opening in the plug, thus causing the threads at the end of the plug to sealingly engage the threads provided in the opening in the metal part. A pin is then inserted into the opening in the plug to force the lands and grooves to expond into engagement and accomplish a second seal with the inner surface of the opening in the metal part.

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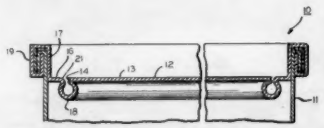
**3,837,523**
**BEADED CLOSURE FOR CONTAINERS**

**Melvin A. Koboldt, deceased, late of St. Louis, Mo. (by Norma Koboldt, executrix); Ellsworth J. Ruf, Florissant, and Anthony W. Kennedy, Crestwood, both of Mo., assignors to Container Corporation of America, Chicago, Ill.**

**Filed Jan. 18, 1973, Ser. No. 324,860**
**Int. Cl. B65d 17/00**
**U.S. Cl. 220—27** **1 Claim**



A closure for a container body includes a central panel having a removable portion defined by a line of weakness and a fixed portion surrounding the removable portion and secured to the container body. The fixed portion is detachably joined to the removable portion by an uninterrupted hollow bead disposed below the plane of both portions, the bead having a transverse cross section defining an open top channel. One edge of the opening of the channel is connected to the removable portion at the line of weakness, and the other edge of the opening is connected to the fixed portion, the channel affording entrance for a conventional can closure opening tool which separates the removable portion from the bead at the line of weakness.

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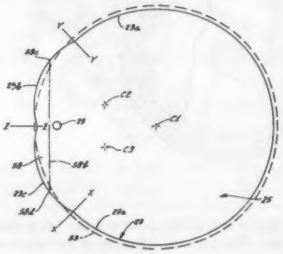
**3,837,524**
**EASY OPENING CONTAINER WALL**

**James R. Schubert, 4243 Merrimac Ave., Dayton, Ohio 45405, and Omar L. Brown, 148 Napoleon Dr., Dayton, Ohio 45429**

**Continuation-in-part of Ser. No. 238,187, March 27, 1972.**
**This application Feb. 28, 1973, Ser. No. 336,404**
**Int. Cl. B65d 17/20**
**U.S. Cl. 220—54** **17 Claims**



An easy opening container wall comprising a container wall of sheet material having a line of weakness therein defining a tear portion at least partially removable from the container wall. Removal of the tear portion provides a relatively sharp edge along the tear portion. A guard is provided along the periphery of the tear portion to protect the consumer from injury. The guard is interrupted adjacent the location at which the line of score is initially ruptured to facilitate such initial

rupture. The outer periphery of the guard and the score line are configured and positioned relative to each other to minimize interference by the guard during the opening operation.

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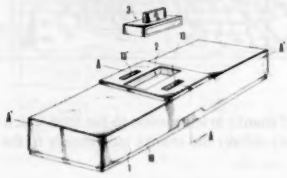
**3,837,525**
**CASE HAVING MAGNETIC LOCK MEANS**

**Sanzo Kobayashi, No. 34-9 Ryusen 3-chome, Taito-ku, Tokyo, Japan**

**Filed Aug. 9, 1972, Ser. No. 279,181**
**Claims priority, application Japan, Nov. 17, 1971, 46-107707**
**Int. Cl. A47j *27/08, 36/10*; B65d *45/00***
**U.S. Cl. 220—55 K** **5 Claims**



A case includes a bottom part or tray with a cover part which is telescopically engagable therewith. The top and bottom parts include interengagable latching members, namely a movable depending latch carried by the cover which is engagable with a detent or receiving latch part carried by the bottom when the two parts are telescopically engaged. The top part or cover includes a recess in which designed to receive a magnet, which magnetically attracts the latch parts carried by the cover so that they are displaced out of engagement with the receiving detents carried by the bottom part to unlock the device. The magnet is provided with a handle so that it may be lifted into and out of the recess defined in the top part in accordance with whether the two parts are to be locked together or unlocked.

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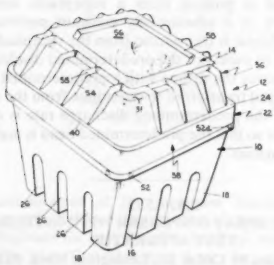
**3,837,526**
**COVER FOR PRODUCE CARTON**

**Roger L. Medendorp, Grand Rapids, Mich., assignor to Kirkhof Manufacturing Corporation, Grand Rapids, Mich.**

**Filed Aug. 31, 1972, Ser. No. 285,344**
**Int. Cl. B65d *43/10***
**U.S. Cl. 220—60 R** **16 Claims**



A berry container and its contents are enclosed by a one-piece cover differential-pressure formed of very thin thermoplastic material suitable for packaging, protecting and displaying the berries. The cover is cup-shaped and the interior of each side is formed with a narrow shoulder which seats on the upper lip of the container to index the cover relative the container. A pair of differential-pressure formed, rounded protuberances positioned at each corner beneath the shoulder are cammed over the container lip to releasably lock the cover lip to the container. Increased resistance to deflection by both vertical and transverse loads is obtained by forming into the sides a series of longitudinally spaced vertically standing ribs.

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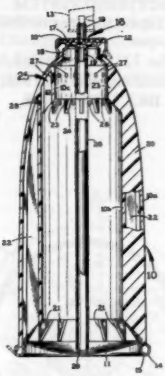
**3,837,527**
**REINFORCED AEROSOL CONTAINER**

**Louis F. Kutik, 8720 S.W. 23rd Pl., Fort Lauderdale, Fla. 33314, and Raymond R. Swier, 20200 W. Country Club Dr., Townhouse 121, North Miami Beach, Fla. 33163**

**Filed Mar. 16, 1973, Ser. No. 341,895**
**Int. Cl. B65d *7/42***
**U.S. Cl. 220—72** **13 Claims**



An aerosol container having a plastic container body with an annular outer wall reinforced by radial ribs which divide the interior circumferentially into compartments that are open to each other. Preferably, these ribs tie the outer wall to a cylindrical inner wall that is spaced inside the outer wall.

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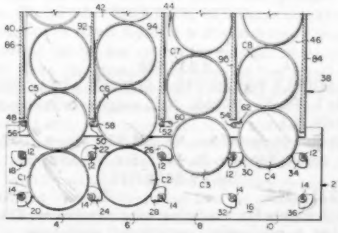
**3,837,528**
**ARTICLE DELIVERY SYSTEMS FOR VENDING MACHINES HAVING SEQUENTIALLY ACTUATED DISPENSERS**

**John J. Rakucewicz, Northport, N.Y., assignor to Kinematics and Controls Corporation, New York, N.Y.**

**Division of Ser. No. 52,477, July 6, 1970, Pat. No. 3,713,715.**
**This application Nov. 2, 1972, Ser. No. 303,260**
**Int. Cl. B65g *3/44***
**U.S. Cl. 221—114** **10 Claims**



An article delivery system for vending machines comprising a vending mechanism and a vend rack. The vending

mechanism comprises a plurality of vending columns, each having a gate which is disposed out of phase a predetermined amount with at least one other gate, and which is moveably affixed with respect to a vending column. When the gate is in a closed position the articles may be retained in and above the vending mechanism. By periodically causing the gates to move a predetermined amount, one gate will be selectively moved to an open position during each vending cycle such that the articles in and above the vending mechanism may be sequentially vended. The vend rack may be affixed to the vending machine, or comprise a plurality of portable vend rack modules.

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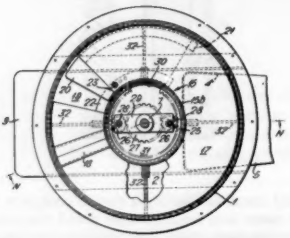
**3,837,529**
**BOTTLING SYSTEM**

**Kazuo Ueda, Tokyo, Japan, assignor to Shikoku Kakooki Co., Ltd., Tokushima, Japan**

**Division of Ser. No. 231,286, March 2, 1972, Pat. No. 3,792,949. This application Mar. 19, 1973, Ser. No. 342,379**
**Int. Cl. B65g** *65/48*
**U.S. Cl. 221—265** **2 Claims**



A bottling system comprising a molding machine for producing synthetic resin bottles, a bottle aligning machine for continuously receiving the bottles and sending them successively out in a row in an upright position, a bottling machine to be supplied with the bottles from the bottle aligning machine for filling the bottles, a printing machine disposed in the path of travel of the upright bottles for printing the bottles, and a capping machine such as a heat sealer for capping the filled bottles.

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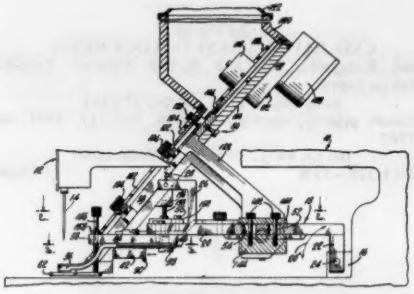
**3,837,530**
**SHANK SUPPLY FOR BUTTON-SEWING ATTACHMENTS**

**Benjamin L. Snyder, Hillside, N.J., assignor to Pentapco, Inc., Elizabeth, N.J.**

**Continuation-in-part of Ser. No. 251,824, May 9, 1972. This application Apr. 26, 1973, Ser. No. 354,824**
**Int. Cl. B65h** *5/16*
**U.S. Cl. 221—268** **13 Claims**

A shank supply for a button-sewing attachment. The shank supply has a positioning portion for positioning a shank properly with respect to a button, and a feed is provided for feeding a shank to the positioning portion to the held thereby at a proper position with the feed retaining the shank at the location determined by the positioning portion in such a way that the shank is freely rotatable. A guide is provided for guiding a series of shanks in succession to the feed which functions to successively deliver the shanks individually to the positioning portion.



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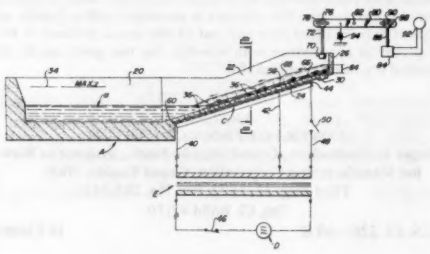
**3,837,531**
**METHOD FOR POURING LIQUID METAL USING ELECTROMAGNETIC PUMP**

**Henry L. Eickelberg, Port Washington, Wis., assignor to Modern Equipment Company, Port Washington, Wis.**

**Filed Feb. 14, 1972, Ser. No. 226,114**
**Int. Cl. B22d** *37/00*
**U.S. Cl. 222—1** **5 Claims**



Molten metal is poured from a receptacle through a discharge orifice at a substantially constant predetermined discharge rate. Metal is transferred from the receptacle to the orifice at a rate in excess of the predetermined discharge rate to completely cover the orifice with a predetermined head of liquid metal. Metal transferred to the orifice from the receptacle in excess of the predetermined discharge rate is returned to the receptacle so that the predetermined head is maintained substantially constant.

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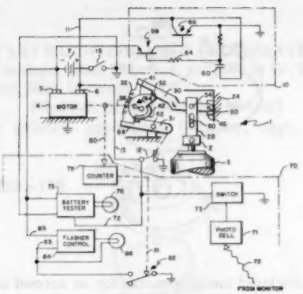
**3,837,532**
**AUTOMATIC SPRAY DISPENSER WITH INTEGRATED TEST APPARATUS**

**Edward Sahatjian, 98 Cedar St., Lexington, Mass. 02173, and Gottfried Maurer, 281 Country Way, Needham, Mass. 02192**

**Filed July 16, 1973, Ser. No. 379,373**
**Int. Cl. B67d** *5/28*
**U.S. Cl. 222—70** **10 Claims**

Automatic aerosol spray apparatus which contains an aerosol container with a mechanically actuated spray valve,

includes a drive motor for driving a mechanism which actuates the valve at regular intervals each initiated by a relatively brief motor drive cycle during which the motor is energized first through a timer circuit and then through a motor drive switch is improved by light actuated testing apparatus integrated therewith. The testing apparatus includes a light actuated photocell which procudes an electrical output for controlling a test switch electrically connected in parallel with the motor




drive switch so that the spray apparatus is tested by illuminating the photocell causing the motor to drive through a cycle and actuate the aerosol spray. In a preferred embodiment, the apparatus is energized by a battery and a battery test circuit is connected to the battery and also to a battery test indicator which is activated by the test switch. Thus, by illuminating the photocell, the spray apparatus is actuated and the battery test indicator is operated for observation.

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**3,837,533**

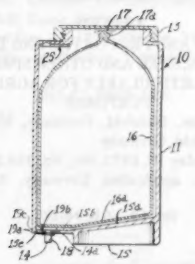
**FLUID SUBSTANCE DISPENSER**

**Robert E. Splan, 900 E. Wilmette Rd., Palatine, Ill. 60067**

**Filed June 16, 1972, Ser. No. 263,465**

**Int. Cl. B65d** *35/22*

**U.S. Cl. 222—94** **3 Claims**




The embodiment of the invention disclosed herein is directed to a fluid dispensing device which is usable as a condiment dispenser for such things as ketchup, mustard, mayonnaise or the like. The dispensing device has a hand-manipulated flexible housing which is provided with an access opening at the top thereof and an outlet port at the bottom. The access opening is adapted to receive a container which is formed of film material and which supports the fluid substance to be placed into the dispensing device. The container is insertable into the housing so that a nozzle or valve element is positioned at the bottom of the container and fits through the outlet port from where the fluid substance can be dispensed. A check valve member is formed in the housing so that upon manual squeezing of the housing pressure is applied to the film container and the fluid substance is thereby dispensed. Upon releasing hand pressure of the housing, atmospheric pressure is pulled into the housing by opening of the check valve. The dispensing nozzle is formed as part of the film container rather than part of the outer support housing. The nozzle is a single, integral element having a starter passage portion into which an initial quantity of fluid substance flows prior to initial opening of the valve, a seal portion downstream of the starter passage portion which is resiliently opened and closed by the normal elasticity of the material forming the nozzle, and a dispensing end completely closeable so that the fluid substance is not left about the nozzle when the upstream seal is in a closed condition.

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**3,837,534**

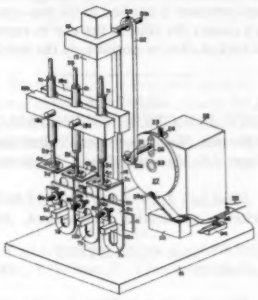
**COMPACT, FLEXIBLE, MULTIPLE FLUID DISPENSER**

**Samuel Natelson, Chicago, Ill., assignor to Rohe Scientific Corporation, Santa Ana, Calif.**

**Filed Oct. 16, 1972, Ser. No. 297,797**

**Int. Cl. B67d** *5/52*

**U.S. Cl. 222—137** **11 Claims**

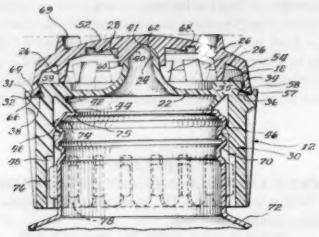


A simple compact fluid dispenser, capable of dispensing a plurality of fluids from separate containers, the volume dispensed from each container of the dispenser being independently adjustable over a wide range. In the instrument, a motor rotates a cam causing a slide to move up and then down along a slide post. Attached to the slide post is a fixed clamp capable of holding a plurality of containers in the form of syringes. The plungers of these syringes each rest on a separate movable support. Lift bars are attached to a slide in such a manner that free travel is allowed before they engage and lift the different supports. The extent of free travel can be zero, in which case the slide lifts and lowers the plunger its full traverse. On the other hand, it may be so large that as much as 99 percent of its travel distance is free and only 1 percent of the travel of the lift bar causes the plunger to be raised or lowered. Thus, one plunger may have no free travel and the other have 99 percent free travel, delivering only 1 percent of the volume delivered from the first plunger, on the same stroke of the slide. The movement of the slide is also adjustable. This is done by moving a pivot around, which a connecting bar from the cam to the slide rotates so that it is closer or further from the center of the cam, regulating the diameter of the circle that the bar travels, and thus the maximum thrust of the slide. By means of shims, syringes of different bore may be utilized giving further flexibility to the instrument. The instrument can be used in connection with several types of valve arrangements, including a preferred type of multiple rotary valve.

3,837,535
**PLASTIC DISPENSING NOZZLE WITH RECLOSABLE CLOSURE CAP**

Richard G. Gerk, Palos Park, Ill., assignor to FORMOLD, a division of VCA Corporation, Blue Island, Ill.

Filed Feb. 9, 1973, Ser. No. 331,216
Int. Cl. B65d *55/02*
U.S. Cl. 222—143 8 Claims



A plastic dispensing nozzle provided with a flexible diaphragm which has a pouring spout and with a cap for closing the pouring spout, which cap and nozzle have interengaging means so that the cap cannot be removed from its closure position unless pressure is applied to the top central portion of the cap which causes the skirt of the cap to expand and disengage from its locked closure position on the nozzle.

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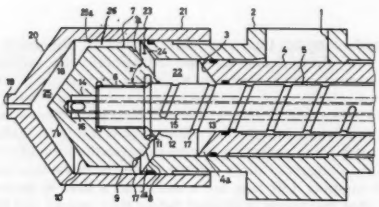
3,837,536
**PLASTIC INJECTION MOLDING MACHINE**

Hans Ulrich Hauser, Niederweningen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Filed July 2, 1973, Ser. No. 375,963
Claims priority, application Switzerland, July 18, 1972, 10774/72
Int. Cl. G01f *11/02*
U.S. Cl. 222—146 C 8 Claims

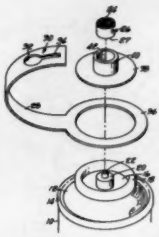


An injection molding machine for processing plastics wherein the plastic mass for the injection operation is propelled by means of a packer piston through a shearing gap between the inner wall of an injection cylinder and a rotatably driven plasticizing head into a displacement compartment of the injection cylinder and thus plasticized. The plasticizing head is arranged at a shaft piercingly extending through the packer piston and the packer piston is displaceable up to the region of the plasticizing head. The plasticizing head possesses a greater diameter than the packer piston, and the end surface of a packing cylinder which houses the packer piston and confronting the plasticizing head and the face of the plasticizing head confronting the packing cylinder possesses a further gap arranged ahead of the shearing gap and which can be closed by axial displacement of the plasticizing head or the packer piston.

3,837,537
**AEROSOL DISPENSER WITH ACTUATOR LATCHING MEANS**

Richard F. Baldwin, Almeda, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed Oct. 19, 1972, Ser. No. 298,960
Int. Cl. B67b *5/00*
U.S. Cl. 222—153 7 Claims



There is disclosed latching means for an aerosol dispenser of the type having a container with a vertically extending axially movable dispensing and valve actuating tube. An actuating button is mounted on the outer end of the tube and includes a dispensing orifice or nozzle in communication with the dispensing tube. An insert comprises a sleeve engaging the top of the container and extending upward along and surrounding the dispensing tube terminating just short of a lower ledge of the actuating button and defining by the upper edge a shoulder in opposition to a shoulder defined by the lower edge of the actuating button. These shoulders are spaced a distance slightly exceeding the thickness of an elongated strap secured to the container and includes a slot for receiving the dispensing tube so as to dispose portions of the strap adjacent to slot in blocking position between the opposed shoulders defined by the lower edge of the actuating button and the upper edge of the insert sleeve. The insert is of a resilient material and, when not in latch positions, extends beyond the outer edge of the container to block the placement of a cap normally fitted over the dispensing assembly on the rim of said container.

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3,837,538
**DISTRIBUTING AND PROPORTIONING DEVICE FOR FERTILIZERS, SEED AND OTHER SPREADABLE PRODUCTS, PARTICULARLY FOR AGRICULTURAL PURPOSES**

Hubert Wiegelmann, Bielefeld, Germany, assignor to Kuxmann KG, Bielefeld, Germany

Filed May 10, 1973, Ser. No. 358,886
Claims priority, application Germany, May 25, 1972, 2225347
Int. Cl. A01c *19/00*
U.S. Cl. 222—178 6 Claims

A distributing and proportioning device for spreadable products that consists of a mobile container and one or two outrigger channels which are positioned with its inner ends under outlet unions of the container and extending transverse-

ly to the direction of travel and provided with oblong distributing slots. A substantially plane conveyor belt is running endlessly around horizontal axes above the bottom of the outrigger channels which carries the products fed from the container by friction resistance to the outer ends of the channels which thus are wholly filled. Distributing fingers mounted at the belts spread the products through the distributing slots in an amount dependent on the peripheral speed of the belts or of the vertical distance of the slots.

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**3,837,539**

**CART MOUNTED REMOVABLE SPRAYER**

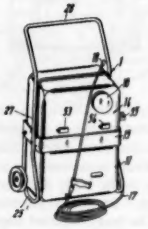
**Joachim Schlegel, Sinn, Germany, assignor to W. Ernst Haas and Sohn, Sinn, Germany**

**Filed Feb. 8, 1973, Ser. No. 330,863**

**Claims priority, application Germany, Sept. 1, 1972, 2243075**

**Int. Cl. B62b** *1/06*

**U.S. Cl. 222—178** **5 Claims**



A frame is provided with an axle having two wheels so that the frame can be pivoted between an upright and a substantially horizontal position. A carrier plate is mounted on the frame and carries a receptacle and a motor, as well as a pressure-producing unit which is removably secured to the plate and can either produce positive or negative pressure.

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**3,837,540**

**CONTROL METHOD AND APPARATUS**

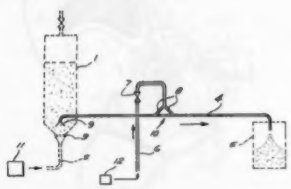
**Heinrich Wagener, Bochum, Germany, assignor to Bergwerksverband GmbH, Essen, Germany**

**Filed Dec. 22, 1972, Ser. No. 317,652**

**Claims priority, application Germany, Dec. 24, 1971, 2164671**

**Int. Cl. B65b** *3/26*

**U.S. Cl. 222—193** **13 Claims**



A method for controlling the flow of fluidized particulate material through a pipe. The material is caused to flow through the pipe due to a pressure differential between the pipe and the region at the outlet thereof; a gas is introduced into the pipe at a pressure sufficient to abruptly interrupt the flow of material. An apparatus for carrying out the method has a container in which the particulate material is fluidized to be conveyed therefrom through a pipe which communicates with the interior of the container and with a region of lower pressure than prevails in the container. Duct means communicate with the interior of the pipe and gas at a higher pressure than that in the pipe may be introduced into the latter via the duct means. This permits control of the flow of material through the pipe by abruptly destroying the pressure gradient between the container and the region to which the pipe discharges.

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**3,837,541**

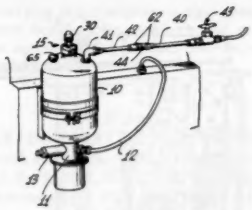
**STARTING FLUID INJECTION SYSTEM**

**Gilbert R. Grigsby, Los Angeles, Calif., assignor to Lubrastart International, Los Angeles, Calif.**

**Filed Mar. 23, 1973, Ser. No. 344,171**

**Int. Cl. B65d** *83/14*

**U.S. Cl. 222—397** **8 Claims**



In a system for dispensing a metered quantity of starting fluid in an internal combustion engine, means for pressurizing the starting fluid reservoir from an external source of compressed air, including a valving system to accomplish this and a special check valve particularly adapted for use in the system.

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**3,837,542**

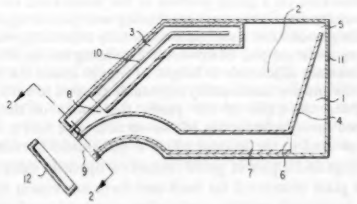
**AUTOMATICALLY OPERATING LIQUID DISPENSER**

**Laacey Laslo Por, P.O. Box 37, Christainsted, St. Croix, V.I. 00820**

**Filed Dec. 6, 1972, Ser. No. 312,638**

**Int. Cl. G01f** *11/26*

**U.S. Cl. 222—456** **4 Claims**



A dispenser of approximately equal amounts of liquid at each pouring is disclosed. It is a container having a bottom and walls extending up from the bottom. A pouring and filling spout extends vertically along a portion of the wall with its lower end in spaced relation to the bottom and its upper end is at the pouring area at the top of the container. An air tube compartment is positioned in the container along a wall portion opposite to the spout. From the bottom end of pouring spout there extends a wall obliquely to the bottom of the container to where it forms with the bottom and adjacent wall opposite the spout and vertically below the air tube compartment an opening and the area defined is the measuring compartment. Above this oblique wall and bounded by the walls of

the container is a container compartment that is in communication with the measuring compartment through the opening. When the container is tilted to the horizontal position a measured amount of liquid in the measuring compartment and spout is evacuated.

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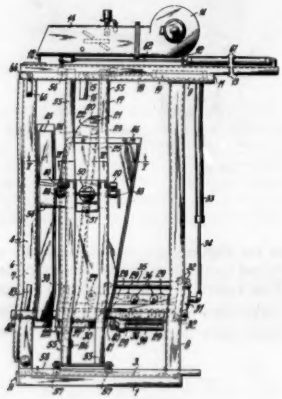
**3,837,543**
**PANTS PRESSING MACHINE**

**Gunther Brollos, Ludwig-Siebertstrasse 56, D 8803 Rothenburg O.T., Germany**

**Filed Oct. 16, 1973, Ser. No. 406,889**
**Claims priority, application Germany, Oct. 16, 1972, 2250640**
**Int. Cl. D06c** *15/00*
**U.S. Cl. 223—73** **10 Claims**



A clamping device on each side of a vertical pipe on a framework is adapted to grip a pair of pants at the front part of the waistband and a downwardly projecting journal reciprocated on the upper portion of the framework is adapted to grip the rear inner part of the waistband to tighten the waistband horizontally. A carriage that is selectively vertically movable on a guide portion of the framework carries a horizontally adjustable carriage having one pair of upwardly extending hooks and a second horizontally adjustable member carrying a second pair of upwardly extending hooks, whereby the hooks are adjustable in height to engage inside the legs of the pants and are horizontally adjustable relative to each other to tighten the cuffs of the pants, the hooks of the pairs disposed on opposite sides of the vertical pipe and a center plate pivoted to the journal which is positioned between the pants legs and a pair of guide frames on opposite sides of the center plate connected for back-and-forth movement relative to the framework and the center plate carrying lateral pressing plate members connected to be selectively moved toward and away from the center plate and vertical pipe to effect pressing of a pair of pants.

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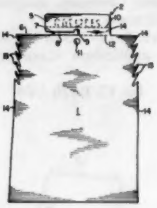
**3,837,544**
**GARMENT DISPLAY DEVICE**

**Michael Greenwald, New York, N.Y., assignor to Amtel, Incorporated, Providence, R.I.**

**Filed June 8, 1973, Ser. No. 368,205**
**Int. Cl. A47j** *51/094*
**U.S. Cl. 223—87** **9 Claims**

The device comprises a body adapted to receive disposed thereabout a garment in a manner such that the body is positioned outside the garment interior, and means on the body for removably securing the body to a holder such as a display arm. Serations are optionally provided at the edge of the body and function to maintain the position of a garment disposed about the body fixed relative to the body. The means for removably securing is an inverted substantially L-shaped extension of the body; said means consists of a vertical and a horizontal segment. The vertical segment extends upward from the top edge of the body. The horizontal segment extends from the vertical segment, overhangs the top edge of the body and defines there between a blind slot having a recess which is adapted to removably receive the holder. The body



with garment ensconsed thereon can be encased in a clear plastic bag. The substantially L-shaped extension may be totally or partially removable; when completely removed the body can be alternatively removably secured to the holder by means of an opening in the body adapted to receive a holder such as a display arm. The device permits ready viewing of a displayed garment. The body is raised slightly to disengage the display arm from the recess, whereupon the display arm moves into the slot and the body can be moved so that the arm is moved along the slot but not out of the slot. After viewing, the procedure is reversed to replace the garment in its original position on the display.

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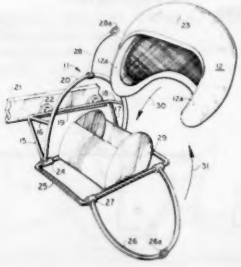
**3,837,545**
**STRUCTURE FOR SECURITY HOLDING OF A HELMET ON A VEHICLE**

**Leonard O. Rogers, Jr., P.O. Box 117, Norman Park, Ga. 31771**

**Filed Jan. 19, 1972, Ser. No. 219,085**
**Int. Cl. B62j** *11/00*
**U.S. Cl. 224—31** **5 Claims**



This invention concerns several embodiments of a structural arrangement on a vehicle by which a riding helmet may be security retained or locked to the vehicle. The structure comprises essentially a vehicle mounted frame with a pair of circularly shaped or curved rod pivotally connected relative to the base of a vehicle mounted frame, or pivotally connected relative to each other in any appropriate manner to the vehicle

structure; the curvature or circular shape of the rods being less than the maximum curvature of the helmet exterior. Included is an arrangement whereby the rods are relatively immovable to each other when locked in a position to secure a helmet. Also a security container for valuables may be incorporated with the base portion of the structure so as to locate the open side of such a security container within the interior of a helmet secured to the vehicle through the disclosed structure.

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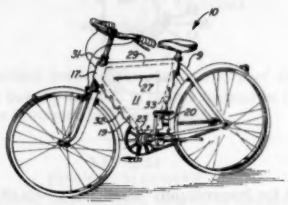
**3,837,546**

## LIGHTWEIGHT LUGGAGE CARRIER FOR BICYCLES

**Arthur R. Westermann, 2328 E. Osborn Rd., Phoenix, Ariz. 85016**

**Filed June 11, 1973, Ser. No. 368,978**
**Int. Cl. B62j** *7/02*
**U.S. Cl. 224—35** **7 Claims**



A lightweight, detachably mounted luggage carrier for bicycles formed from one or more pieces of flexible material which, when associated with the frame of a bicycle, forms luggage carrying compartments with openings thereto.

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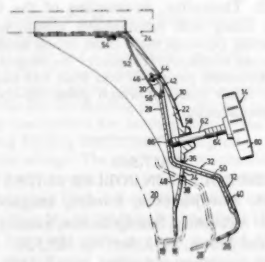
**3,837,547**

## SUPPORT LEG TO BE FASTENED IN ROOF GUTTERS OF AUTOMOBILES

**Eric Joos, Malung, Sweden, assignor to AB Eric Joos, Malung, Sweden**

**Filed Oct. 31, 1972, Ser. No. 302,412**
**Claims priority, application Sweden, Nov. 1, 1971, 13882/71**
**Int. Cl. B60n** *9/08*
**U.S. Cl. 224—42.1 E** **8 Claims**



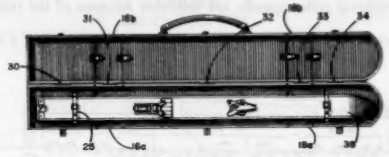
A support leg to be fastened in roof gutters of automobiles comprising a leg and a separate hook-shaped clamping plate to be moved with its hook end towards the lower end of the clamping plate by means of an adjusting screw. The clamping plate extends through an opening in the clamping plate and is guided to be displaced upwardly when the screw is tightened.

**3,837,548**

## SKI CARRYING CASE

**David Nerger, 827 Toni, Pensacola, Fla. 32504**

**Filed Mar. 27, 1973, Ser. No. 345,291**
**Int. Cl. A45c** *7/00*
**U.S. Cl. 224—45 S** **6 Claims**



A case for carrying skis comprises a rigid case having oppositely disposed hollow case portions and one or more removable case sections which sections may be removed for varying the length of the ski case.

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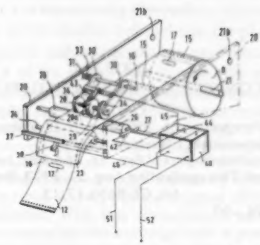
**3,837,549**

## DISPENSER FOR CARRYING BAGS OR THE LIKE

**Karl H. Sengewald, 4801 Kunsebeck, Westphalia, Germany**

**Division of Ser. No. 93,048, Nov. 27, 1970, abandoned. This application July 2, 1973, Ser. No. 375,641**
**Int. Cl. B26f** *3/02*
**U.S. Cl. 225—11** **9 Claims**



A dispenser for carrying bags from a roll-wound or layer-packed continuous strip form supply, presenting ready for the user a single bag pendent from a mouth device, which is shiftable upon tearing off a bag to initiate automatic feed of a bag length of the strip by strip embracing drive rollers. With bags having grip holes, feed rollers cooperating also as normally closed switch contacts, in sensing arrival of a hole, determine the feed of a bag length for terminating a feed cycle. Small front space is required by the mouth device in store display areas.

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**3,837,550**

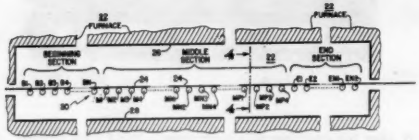
## ROLLER CONVEYING OF STRIP MATERIAL

**Samuel Levy, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Continuation of Ser. No. 256,657, May 25, 1972, abandoned. This application Apr. 18, 1973, Ser. No. 352,112**
**Int. Cl. B65h** *17/42*
**U.S. Cl. 226—4** **53 Claims**

Different peripheral speeds of rollers at opposite ends of a series of unidirectionally driven rollers establish velocity $V_s$ and tension T of a thin steel strip being supported on and conveyed along the series. The rest of the rollers are driven at peripheral speeds which are asynchronous relative to $V_s$; some slip faster, or forward, while others slip slower, or behind. Sub-

stantially equal but oppositely directed frictional forces are developed in the moving strip by the faster and slower slipping rollers so that the tension T is not changed. Consequently, the strip neither tears nor cobbles. The speed of motors driving the asynchronously rotated rollers may be set to cause said rollers to have an average peripheral speed equal to $V_s$. However, relatively wide variations in motor speed, and resulting peripheral roller speeds, are tolerable because of the relative




independence of frictional force magnitudes from slip speed. Also, the speeds of motors driving selected groups of asynchronously rotated rollers may be varied deliberately for, among other purposes, gradually establishing tension in the strip. Also disclosed are ways and means for conveying the strip past one or more groups of stalled rollers. Both cylindrical and frustro-conical rollers are employed in different embodiments.

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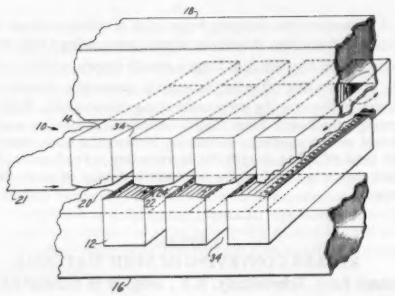
**3,837,551**

## WEB CONVEYING AND TREATING METHOD AND APPARATUS

**Alex J. Schregenberger, Milltown, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio**

**Continuation-in-part of Ser. No. 264,250, June 19, 1972, abandoned. This application Aug. 22, 1973, Ser. No. 390,498**
**Int. Cl. B65h** *17/32*
**U.S. Cl. 226—97** **6 Claims**



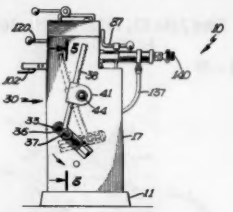

A web conveying apparatus having a plurality of pressure pads positioned transversely to the path of a web. Each pad has a surface generally parallel to the path of the web with a row of eyelid shaped openings extending along each longitudinal side of the pad. The eyelid openings are staggered transversely of the web and are oriented to direct the treating medium toward a region over the centerline of the pad surface.

**3,837,552**

## INTERMITTENT DRIVE MECHANISM

**Thomas J. Monahan, Swansea, Mass., and Richard C. Adams, West Barrington, R.I., assignors to G. T. Schjeldahl Company, Northfield, Minn.**

**Division of Ser. No. 151,842, June 10, 1971, which is a continuation-in-part of Ser. No. 81,369, Oct. 16, 1970, abandoned. This application Apr. 17, 1973, Ser. No. 351,835**
**Int. Cl. B65h** *17/22*
**U.S. Cl. 226—122** **12 Claims**




Means for intermittently advancing a web of flexible film comprising drive means for imparting repeating cycles of intermittent motion and dwell to a web of flexible film with the web motion normally being in only the forward direction. The drive means includes an output shaft having first and second input driver means coupled to the output shaft, with the driver means being arranged in phased relationship, one to another, so as to achieve motion in the output shaft for more than 180° of motion in the input shaft. In one operational mode, the driver means are arranged in overlapped phased relationship, one to another, so as to achieve motion from each driver means for less than 180° of motion in the input shaft. In a second operational mode, the driver means are arranged in phased relationship, 180° from each other, so as to achieve motion in the output shaft of 360° during each operational cycle, this 360° of motion being followed by a dwell cycle of 180° of motion, prior to initiating the advance of the web on the next succeeding cycle. In the first operational mode, means are provided for intermittently inter-coupling the first driver means to the input and output shafts for initiating rotation of the output shaft, and for continuing the rotation for a predetermined period of less than one-half cycle of rotation of the input shaft. Thereafter, de-coupling of the first driver means occurs, along with substantially simultaneous inter-coupling occurring between the second driver means and the input shafts for the continued rotation of the output shaft for a second pre-determined period of less than one-half cycle of rotation of the input shaft, at which point, de-coupling the second driver means occurs.

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**3,837,553**

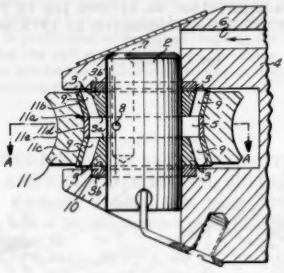
## GUIDE ROLLER IN ROLLER GUIDES

**Nils Erik Bock, Smedjebacken, Sweden, assignor to Morgardshammar Aktiebolag, Smedjebacken, Sweden**

**Filed June 6, 1973, Ser. No. 367,524**
**Claims priority, application Sweden, June 7, 1972, 727462**
**Int. Cl. B65h** *17/20*
**U.S. Cl. 226—194** **4 Claims**

An improved guide roller assembly is utilized to guide high-speed rolled stock. The guide roller assembly includes a rim formed of cemented carbide and having a concave annular outer surface which engages the rolled stock and a circular inner surface. The inner surface of the rim includes a pair of axially opposite end portions having a truncated conical configuration. Two truncated conical bearing members are disposed in engagement with the axially opposite end portions

of the inner surface of the rim. Due to the truncated conical configuration of these bearing sections, a relatively uniform



load is transmitted between the outer surface of the guide roller and the bearing sections in such a manner as to retard cracking of the cemented carbide rim. guide.

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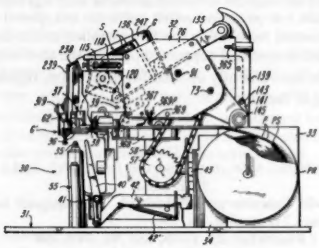
**3,837,554**

## PINNING MACHINE

**Harold N. Grushon, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio**

**Filed Jan. 2, 1973, Ser. No. 320,340**
**Int. Cl. B27f 7/02**
**U.S. Cl. 227—25** **27 Claims**



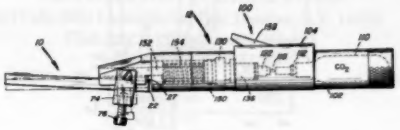
There is disclosed a tag attaching machine, specifically, a pinning machine, for pinning tags onto merchandise. The machine has a die and a cooperable plunger, a pin magazine for driving a pin through a tag and the merchandise while the die and the plunger are in cooperation at a pinning position or zone a pin feeder for feeding pins to the pin magazine, and a tag feeding mechanism for feeding tags to the pinning position. The tag feeding mechanism is adapted to handle a wide range of sizes of tags. The tag feeding mechanism causes relative movement between the tag stack and endless feed means to feed one tag at a time to a waiting position and to thereafter feed the waiting tag to the pinning position. The tag feeding mechanism has a side guide mechanism by which a stack having tags of any selected width can be held in the tag hopper and by which a holding force can be exerted on the tag at the pinning position. A brake mechanism prevents the side guide mechanism from moving into the space occupied by the tag stack when the stack is depleted or nearly depleted. The feeding mechanism is mounted by a subframe pivotally mounted to the frame to provide access to the underside of the feeding mechanism and to the remainder of the machine. A pin clinching and tag holding member is constructed and operated to hold a tag at the pinning position and to thereafter clinch the pointed end of the pin into the tag.

**3,837,555**

## POWERING INSTRUMENT FOR STAPLING SKIN AND FASCIA

**David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Baltimore, Md.**

**Continuation-in-part of Ser. No. 97,995, Dec. 14, 1970, Pat. No. 3,717,294. This application Sept. 22, 1972, Ser. No. 291,301**
**Int. Cl. B25c 1/04**
**U.S. Cl. 227—130** **14 Claims**



A disposable staple cartridge housing a plurality of staples on a flexible belt and adapted to inject and form the staples, singly, into the disunited skin or fascia of a patient. Downwardly projecting flanges on a staple pusher act directly on the forwardmost staple positioned between a pair of adjacent teeth in the flexible belt and move the staple, the belt and its contents, with each stroke of the pusher. The forwardmost staple, when acted upon by the pusher, advances, rides out of the plane of the flexible belt and into the plane of the pusher and is ejected and bent around an anvil assembly. On the return stroke of the pusher, the downwardly projecting flanges flex out of the plane of the next successive staple, moving over that staple, and then take a position in readiness for the following stapling operation. The cartridge is provided with means for preventing the retraction of the staple housing belt during the rearward stroke of the pusher. In a second embodiment of the disposable cartridge, a plurality of staples are advanced as described above, but the number of disposable elements are reduced. With this embodiment, an inventive adaptor serves to associate the cartridge with a powering instrument. Also disclosed is a novel and simplified gas activated powering unit which develops a rectilinear thrust for advancing and forming staples. In one embodiment of the instrument, the nose is rotatable to facilitate alignment of the cartridge with the incision to be sutured.

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**3,837,556**

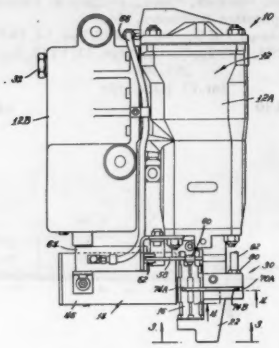
## PNEUMATIC NAILING MACHINE

**Richard H. Doyle, Mount Prospect, and Allen R. Oberg:ell, Park Ridge, both of Ill., assignors to Fastener Corporation, Franklin Park, Ill.**

**Filed Sept. 11, 1972, Ser. No. 287,687**
**Int. Cl. B25c 1/04**
**U.S. Cl. 227—136** **5 Claims**

A pneumatic nailer for driving nails from a flexible belt thereof into a workpiece includes an index cylinder for feeding successive nails into a drive track defined by the cylinder and a nosepiece structure. A sensor engaging flutes or recesses in the cylinder wall controls a control valve assembly to inhibit operation of a driver when the cylinder is not properly positioned. The control valve assembly includes a single cycle valve controlled by a control valve for controlling a pneumatic motor for the driver so that the driver is automatically retracted after a power stroke. This permits the use of the

nailer in assembly machines wherein the nailer and the workpieces are moved relative to each other by preventing the



driver "follow-through" from locking the nailer and the workpiece together. The sensor disables the control valve when the cylinder is not properly positioned.

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**3,837,557**

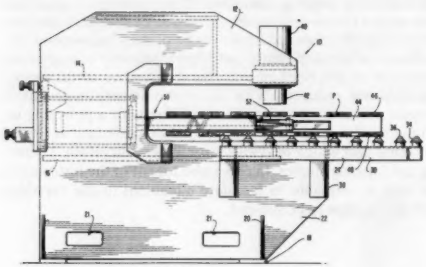
**PRESS FOR REPAIRING PALLET DECKBOARDS**

**John Calvin Jureit, Coral Gables, and Benjamin Harry Kushner, Miami, both of Fla., assignors to Automated Building Components, Inc., Miami, Fla.**

**Filed Mar. 27, 1973, Ser. No. 345,320**

**Int. Cl. B27f** *7/02*

**U.S. Cl. 227—152** **10 Claims**



The press includes a pallet support structure and a horn carried on a pantographic linkage biased to locate the horn for reception between upper and lower deckboards of a pallet disposed on the support structure. The horn carries a wedge which underlies a lower press platen. The press also carries an upper platen. In use, a pallet is disposed on the support structure with the horn received between the deckboards. The portion of a deckboard undergoing repair is located between the registering platens and the upper platen is moved downwardly to embed a reinforcing plate into the top face of the deckboard. A cylinder displaces the wedge carried by the horn to raise a reinforcing plate carried by the lower platen into engagement with the underside of the deckboard. Upon engagement, and continued displacement of the wedge, the horn is displaced downwardly through its pantographic linkage mounting until it rests on the lower deckboards whereupon further displacement of the wedge raises the lower platen to embed the teeth of the reinforcing plate into the underside of the deckboard.

**3,837,558**

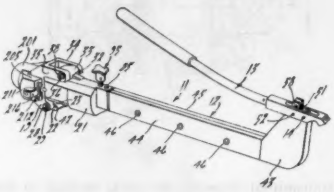
**HYDRAULICALLY OPERATED BUTT WELDER**

**William E. Good, Cinnaminson, and Arthur S. Davies, Avalon, both of N.J., assignors to Kelsey-Hayes Company, Romulus, Mich.**

**Continuation-in-part of Ser. No. 217,096, Jan. 12, 1972, Pat. No. 3,800,997. This application Feb. 23, 1973, Ser. No. 335,057**

**Int. Cl. B23k** *21/00*

**U.S. Cl. 228—3** **5 Claims**



A tool for cold pressure welding workpieces such as coaxial cables together. The tool has a compact arrangement so that it may be hand held and operated. A hydraulic pump and motor are incorporated for providing a force amplification which lends to the compactness and light weight of the assembly. The hydraulic motor operates pairs of dies which dies first grip the ends of the workpieces to be welded and then force these ends into engagement to achieve a cold pressure weld. The pump is constructed so as to effect rapid initial movement of the dies and subsequent slower movement with a greater force amplification. A pressure relief valve is interposed in the hydraulic circuit for limiting the force applied to the dies. The dies are held in pivotally supported parts of the tool so that the tool may be conveniently opened for inspection, replacement or cleaning of the dies.

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**3,837,559**

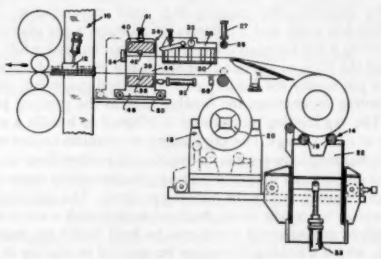
**STRIP JOINING APPARATUS FOR ROLLING MILLS AND THE LIKE**

**Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United Inc., Pittsburgh, Pa.**

**Filed Mar. 22, 1973, Ser. No. 343,750**

**Int. Cl. B23k** *27/00*

**U.S. Cl. 228—4** **9 Claims**



The disclosure pertains to a strip feeding device for a rolling mill adapted to roll joined coils of strip in a continuous and uninterrupted manner. It provides a flying stitcher or multi-spot welder arranged between a coil uncoiling means and the entry guide of the mill. A holding shelf arranged on the entry side of the stitcher or welder and above the mill passline supports the leading end of a second coil in the stitcher or welder

when the stitcher or welder is in its retracted position. When the trailing end of the first coil is about to pass into the mill the supported leading end of the second coil is lowered to the trailing end of the first coil and while the stitcher or welder is advanced towards the mill at a speed substantially synchronous with the speed of the travelling end, the two strips are joined by the stitcher or spot welder. The joining operation is performed without interrupting the travel of the strip so that the mill can maintain its threading speed. After joining, the stitcher or welder and holding shelf can be repositioned to receive the leading end of the next coil.

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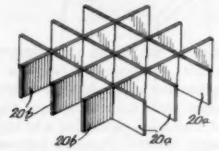
**3,837,560**

**EXPANDED POLYSTYRENE PARTITION STRUCTURE AND METHOD OF MAKING THEREOF**

**Louis G. Kuchuris, Chicago, and Stanley Gembicki, Des Plaines, both of Ill., assignors to Cutting Equipment Leasing, Inc., Chicago, Ill.**

**Filed May 18, 1972, Ser. No. 254,749**
**Int. Cl. B65d** *5/48*
**U.S. Cl. 229—15** **1 Claim**




A partition structure for shipping or storage containers having a plurality of interfitting partition strips with interlocking slots and with the partition strips being formed of expanded polystyrene. In one form thereof, the planar faces of a partition strip have a relatively low density because of said surfaces being formed by saw cut from a block of expanded polystyrene, while the entire peripheral edge of the partition strip, including the interlocking slots, are formed by hot wire cutting to have a higher density on the surface thereof to provide greater physical strength for the partition strip.

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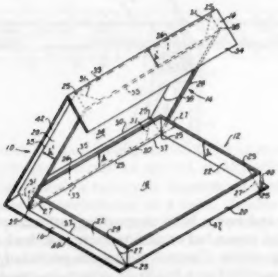
**3,837,561**

**BOX STRUCTURE**

**Marion Sturm Rubin, 65 W. 95th St., New York, N.Y. 10025**

**Continuation-in-part of Ser. No. 879,991, Nov. 26, 1969, Pat. No. 3,679,120. This application July 24, 1972, Ser. No. 274,420**
**Int. Cl. B65d** *5/36, 13/04, 65/10*
**U.S. Cl. 299—23 BT** **4 Claims**



A box structure comprising a pair of box sections that, when erected, can telescope one within the other. Each box section has a central wall, a pair of opposed side walls and a pair of opposed end walls. By the provision of appropriate fold lines, the side walls of one box section are folded outwardly and its end walls are folded inwardly, while the other box section has its side walls and end walls folded conversely. The box sections, when overlying one another, in unerected condition, form a relatively thin package for shipping and storage purposes. The box is strengthened by the fact that inwardly folded walls of one box section counteract the outwardly folded walls of the other box section, when the walls are erected and the box sections are telescoped.

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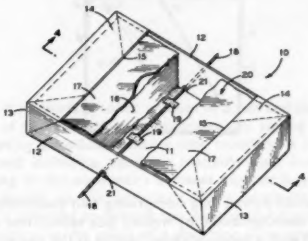
**3,837,562**

**CONTAINER FOR PACKAGING PAPERS**

**Albert Cali, 2481 Lancaster St., East Meadow, N.Y. 11554**

**Filed July 3, 1972, Ser. No. 268,621**
**Int. Cl. B65d** *5/20, 85/00*
**U.S. Cl. 229—32** **1 Claim**



A generally rectangular container for packaging newspapers and other sheet-like material, in which there are provided a pair of top panels that retain the newspapers within the container and which are spaced-apart to provide an opening for inserting the newspapers into the container.

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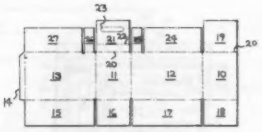
**3,837,563**

**PAPERBOARD CONTAINER WITH INTEGRAL CARRYING MEANS**

**Daniel Brackette, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed Feb. 9, 1973, Ser. No. 331,222**
**Int. Cl. B65d** *5/46*
**U.S. Cl. 229—52 B** **4 Claims**



A paperboard container and blank for making same which can be used for carrying bottles or cans, having a carrier handle formed in the blank without die-cutting, which, when folded, is on the outside of the sealed container. To a typical rectangular container are added the features of one of the first-folded top flaps having formed in it a line-cut oval handhold and a fold line between the handhold and the fold line connecting the flap to the container so that after the first-folded flaps are folded down over the end of the container the

handle portion of the flap is bent back and upwards away from the container. The top or covering flaps are formed with slots so they can be folded down and glued to the first-folded flaps with the handle protruding through the slots, held in place by the covering flaps on both sides.

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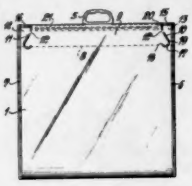
**3,837,564**
**CARRIER BAG**

**Bruno Marquardt, Osnabruck-Nane, and Frank Bosse, Ibbenburen-Dorenthe, both of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany**

**Filed Apr. 4, 1972, Ser. No. 240,922**
**Claims priority, application Germany, Apr. 8, 1971, 2117224**
**Int. Cl. B65d** *33/06*
**U.S. Cl. 229—54 R** **9 Claims**



In a plastics carrier bag comprising two confronting walls which are interconnected by welded side seams, one said wall is provided with a form-retaining handle at the bag mouth and the other wall with a slit through which the handle can be passed to close the bag mouth. The slit is located along substantially the fold line of an inwardly turned flap of said other wall, the flap being engaged by said side seams to define a pocket for receiving a tongue portion of said one wall carrying the handle. The tongue portion is bounded at the sides by incisions which, at a level corresponding to the free edge of the flap, are directed away from the side seams. The incisions may be interrupted so that the tongue portion remains attached to the side seams until it is to be inserted in the pocket.

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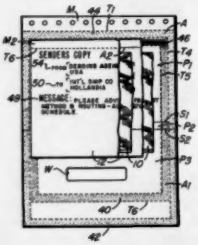
**3,837,565**
**RAPID PRODUCTION ENVELOPE ASSEMBLIES**

**Edward L. Johnsen, 12 Fox Meadow Ln., Wayland, Mass. 01778**

**Filed Feb. 15, 1972, Ser. No. 226,415**
**Int. Cl. B65d** *27/04, 27/06, 27/10, 27/34*
**U.S. Cl. 229—68 R** **19 Claims**



For attaining high speed production of envelope assemblies, with substantial savings of costly time and labor, the present invention teaches a method or plan of manufacture which involves the use of high speed collating machinery such as is customarily employed in the production of continuous record forms, business forms, and the like, from continuous paper webs passed through the collating machinery uninterruptedly at a rapid rate of speed. The envelope assemblies so produced leave the collating machinery as complete units ready for use.

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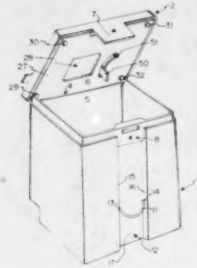
**3,837,566**
**SELF-LOCKING COIN RECEPTACLE**

**Gerald B. McGough, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.**

**Filed July 31, 1972, Ser. No. 276,809**
**Int. Cl. G07b** *15/00*
**U.S. Cl. 232—15** **2 Claims**



A coin receptacle is provided which is simple and less costly to produce than coin receptacles now in use for similar purposes and which has a shutter-latch mechanism in which the latch cannot be actuated and the shutter locked unless the shutter is opened.

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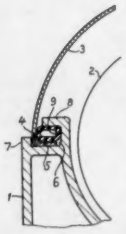
**3,837,567**
**LOCKING DEVICE FOR MACHINE FRAME COVER**

**Carl-Goran Nilson, Tullinge, and Sven Olov Olsson, Farsta, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden**

**Filed Apr. 9, 1973, Ser. No. 349,552**
**Claims priority, application Sweden, Apr. 12, 1972, 4695/72**
**Int. Cl. B04b** *7/06*
**U.S. Cl. 233—1 B** **7 Claims**

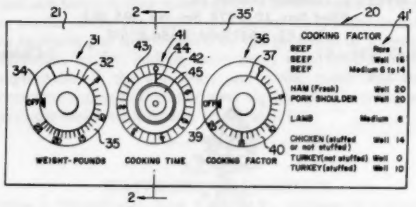


The frame and cover have supporting surfaces engageable by a hose in an expanded condition thereof to lock the cover in its closed position. Control means are provided for maintaining the hose filled with fluid to hold it in its expanded position, such means being operable to discharge fluid from the hose so that it contracts to a condition in which said supporting surfaces permit movement of the cover to an open position.

## 3,837,568
## COMPUTER COOKING MEANS

Carl J. Goodhouse, Litchfield, and Emil Niemand, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 125,743, March 18, 1971, Pat. No. 3,746,250. This application May 2, 1973, Ser. No. 356,499
Int. Cl. G06g 1/00
U.S. Cl. 235—61 A 15 Claims

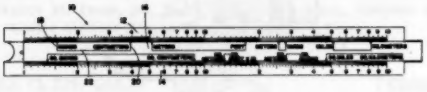



A computer-controller device for controlling the cooking operation of a cooking apparatus, the device having a manually settable weight input for indicating a single selected indicated weight applicable to all meat items and corresponding to the weight of a particular meat item to be cooked. The device has a second manually settable input for indicating a selected variable under other than the weight of the meat. The device has a timer that has a time period output operatively associated with the inputs to provide as an output a cooking time period for the particular meat item computed as a function of both of the inputs. The timer has a time period setting indicator operatively interconnected to the inputs to indicate the computed cooking time period as selected by the inputs. The timer has a reference means movable relative to the indicator to indicate lapsing time during the running of the computed cooking time period.

## 3,837,569
## METRIC CONVERSION RULER

Robert C. Bradbury, Closter, N.J., and Joseph H. Sullivan, New York, N.Y., assignors to Borden, Inc., Columbus, Ohio

Filed May 7, 1973, Ser. No. 358,113
Int. Cl. G06g 1/02; G06c 3/00
U.S. Cl. 235—70 R 10 Claims

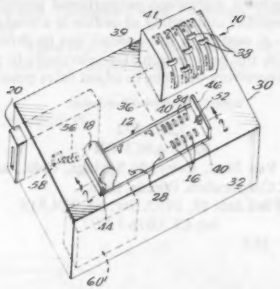


This device for converting British units to metric units and vice versa includes a pair of spaced, rigidly affixed members each provided with a two-cycle logarithmic scale and a slide plate disposed therebetween in a tight, slidable relationship, said slide plate being provided with a plurality of conversion indicia on each side thereof. Each conversion indicia includes a pair of spaced arrows pointing either toward one or the other of said pair of members with the distance between said pair of arrows representing a specific conversion factor which is determined by the distance between numeral "1" on logarithmic scale and the numeral corresponding to the conversion factor.

## 3,837,570
## DATA RECEIVING STORING AND IMPRINTING APPARATUS

Irwin Ginsburgh, Morton Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Apr. 1, 1970, Ser. No. 24,782
Int. Cl. G06k 15/02, 7/08
U.S. Cl. 235—61.9 R 3 Claims

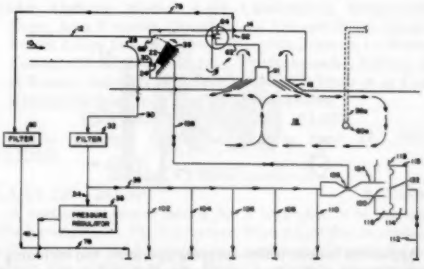


Data corresponding to the amount of a sale and the account number of the customer are received and stored in an apparatus using a modular cassette tape recorder. A customer's credit card including machine readable data indicia corresponding to the customer's account number is placed in a holding station on the apparatus. Then, manually operable means are adjusted to provide machine readable data indicia corresponding to the value of a purchase. The apparatus includes a movable data imprinting and reading head mounted so that it can scan the indicia on the card and also the indicia corresponding to the purchase. This head generates electromagnetic signals corresponding to the indicia and these signals are recorded and stored on the tape in the cassette recorder. A sales ticket at the station and overlying the card is simultaneously imprinted when the indicia is scanned by the head.

## 3,837,571
## SELF-CONTROLLED AIR DISTRIBUTION SYSTEM

William J. Waeldner, Waverly, and William J. Harris, Tunkhannock, both of Pa., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Nov. 15, 1972, Ser. No. 306,559
Int. Cl. F24f 11/02; G05b 11/46
U.S. Cl. 236—49 20 Claims




An air distribution system for supplying conditioned air to at least one zone to be conditioned and comprising a supply duct connected with a diffuser discharging to the conditioned

zone. A modulating valve is provided with a bellows actuator and a control for the actuator is of the fluidic type with power for the actuator and control supplied from a total pressure pick-up in the duct. A duct static or differential pressure signal is fed to the fluidic control together with a pressure set-point and a zone temperature signal. Zone temperature may be measured at the diffuser with a total duct pressure powered aspirator drawing air over a thermostat or a zone located thermostat may be provided. A warm up override is optional. The fluidics comprise a multistage proportional amplifier and a diaphragm amplifier controlling an orifice in a total duct pressure conduit. A venturi in the conduit has its throat section connected with the bellows actuator selectively to pressurize and draw air therefrom whereby to adjust valve position.

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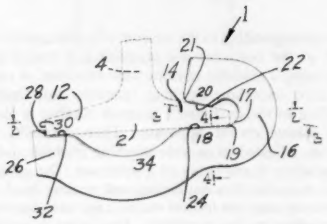
**3,837,572**
**RAIL ANCHOR**

**Arthur Dale Van Sant, Colorado Springs, Colo., assignor to CF&I Steel Corporation, Pueblo, Colo.**

**Filed Jan. 18, 1973, Ser. No. 324,815**
**Int. Cl. E01b** *13/02*
**U.S. Cl. 238—315** **6 Claims**




A one-piece rail anchor of substantially U-shaped cross section which is substantially maintained throughout the entire profile having an improved bearing surface configuration which provides an increased holding capacity.

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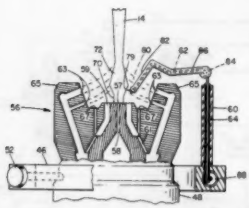
**3,837,573**
**APPARATUS FOR ELECTRIFIED SPRAYING**

**William C. Wagner, 11 Hilltop Dr., Wenham, Mass. 02180**

**Continuation-in-part of Ser. No. 231,210, March 2, 1972, abandoned. This application Feb. 26, 1973, Ser. No. 335,522**
**Int. Cl. B05b** *7/08, 5/02*
**U.S. Cl. 239—15** **22 Claims**



Apparatus for electrified spraying operation and including a power supply with a flow operated switch and an integral assembly with an elongated electrode mounted with an end adjacent to and outside of spray from a spray gun. The electrode is adjustable in position from 0.25 to 1.50 inches from the spray orifice and has a pointed distal end portion extending perpendicularly to the direction of flow of the spray, a sloped portion extending from said end portion laterally and forwardly, and a looped portion for resiliently maintaining the position of the pointed end, with the electrode having an insulating coating over its greater part but with its pointed end bare.

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**3,837,574**
**PERFUMED PACKAGE FOR A SOLID DIFFUSING MATERIAL**

**Frank J. Curran, Downers Grove, Ill., assignor to Frank J. Curran Co., Downers Groves, Ill.**

**Filed Nov. 10, 1972, Ser. No. 305,263**
**Int. Cl. A61l** *9/04*; **B65d** *85/00*
**U.S. Cl. 239—57** **2 Claims**

A vaporizable solid mass to be used as a deodorant room freshener is packaged with a separately contained perfumed mass. The perfume retains its aromatic potency during shelf storage and use of the deodorant freshener product.

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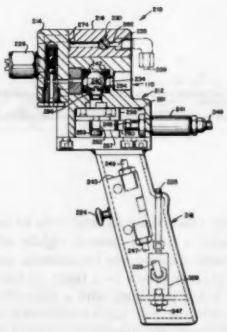
**3,837,575**
**SPRAY GUN**

**Andrew B. Lehnert, Copley, Ohio, assignor to The Upjohn Company, Kalamazoo, Mich.**

**Filed Aug. 27, 1973, Ser. No. 391,928**
**Int. Cl. B05b** *7/04*
**U.S. Cl. 239—112** **9 Claims**



A spray gun is disclosed for use in admixing and spraying, as a homogeneous mixture, two or more chemically reactive fluid components, more especially catalyzed polymerizable resin coating materials such as polyurethanes, epoxides,

polyesters and other thermosets, either of the self-foaming or film-forming type. Because of the high rate of reactivity of the fluid components involved, the gun is designed to restrict actual admixture of them to a relatively small region within the gun body located immediately upstream of the spray discharge orifice so that application to the surface occurs as promptly as practical after admixture. Flow rate control and check valve means are provided in the gun for the several fluid components; in addition a solvent flush system is also incorporated for purging the gun after use. The flow rate control valves are of special ball design, affording greater mechanical simplification and better sealing maintenance than conventional poppet or needle valves. The check valve means are likewise designed to facilitate gun maintenance by the provision of a unitized cartridge, design, making them easily removable from and replaceable in the gun body and giving easier and more complete access to the interior of the gun in connection with periodic major maintenance servicing of it.

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**3,837,576**

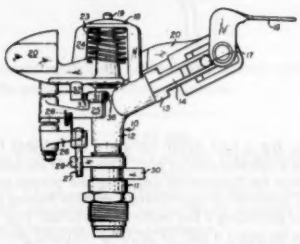
## WATER SPRINKLER DEVICE

**Jules J. Rosenkranz, New York, N.Y., assignor to Lafayette Brass Manufacturing Co., Inc., New York, N.Y.**

**Filed Aug. 24, 1973, Ser. No. 391,232**

**Int. Cl. B05b** *3/08*

**U.S. Cl. 239—230** **2 Claims**



A water sprinkler device in which a spring-return impactor is driven by the water jet issuing from a rotary sprinkler head and executes oscillatory movement to apply impact forces to the sprinkler head which turn the sprinkler head changing the direction of the water jet. The intensity of the impact forces transmitted to the sprinkler head can be selectively varied for a given level of water jet impulse by operating an adjustment means provided on an impact receiving means.

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**3,837,577**

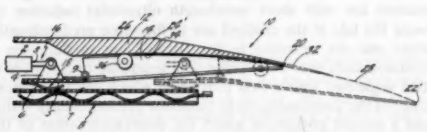
## MINIMUM DRAG VARIABLE AREA EXHAUST NOZZLE

**Walter M. Presz, Jr., North Wilbraham, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.**

**Filed June 29, 1973, Ser. No. 375,275**

**Int. Cl. B64c** *23/00, 1/38*

**U.S. Cl. 239—265.33** **7 Claims**



A variable area exhaust nozzle has the external contour of its flaps forming a substantially continuous afterbody surface with the downstream portion of the engine nacelle when the flaps are extended wherein the afterbody surface so formed has a maximum cross sectional area at its forward end which decreases linearly with respect to its axial length to a minimum cross sectional area at its rearward end. This results in an exhaust nozzle having the lowest possible external drag.

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**3,837,578**

## TURBOJET ENGINES WITH PIVOTING JET PIPE AND THRUST REVERSING MEANS

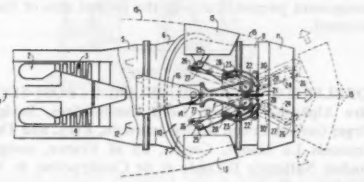
**Heinrich Leibach, Grafrath-Wildenroth, Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Germany**

**Filed Oct. 3, 1973, Ser. No. 402,907**

**Claims priority, application Germany, Oct. 3, 1972, 2248480**

**Int. Cl. B64c** *9/38, 15/04*

**U.S. Cl. 239—265.35** **23 Claims**



A jet exhaust control arrangement for controlling the exhausting of thrust gases supplied by turbo jet engines. The arrangement includes a fixed pipe section for accepting gases from the engine and at least one further downstream pipe section which is pivotal with respect to the fixed pipe section for effecting changes in the direction of the exhausting of gases through a nozzle arranged at the downstream end of the pivotal pipe section. Thrust reversing deflecting flaps are mounted for movement with the pivotal pipe section and are movable into and out of the exhaust of the nozzle for effecting a reversal of the thrust forces. The pivoting movement of the pivotal pipe section and the movement of the deflecting elements into and out of the exhaust gas stream is controlled so as to accommodate an effective attitude control by the combination of selecting the exhaust direction and the amount of thrust reversal.

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**3,837,579**

## VARIABLE-GEOMETRY NOZZLE FOR A JET ENGINE

**Andre Alphonse Mederic Leon Camboulives, Savigny-sur-Orge; Jean Francois Chambon, Le Mee-sur-Seine; Gerard Ernest Andre Jourdain, Evry; Theophile Francois Le Maout, Cesson, and Roger Alfred Jules Vandenbroucke, Antony, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs d'Aviation, Paris, France**

**Filed June 19, 1973, Ser. No. 371,659**

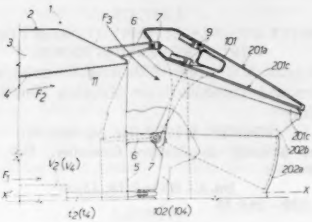
**Claims priority, application France, June 19, 1972, 72.22052**

**Int. Cl. B64c** *15/04*

**U.S. Cl. 239—265.39** **12 Claims**

A variable-geometry nozzle for a jet engine is of the type which comprises a fixed structure, flaps adjustable in position with respect to the fixed structure, and control means for adjusting the position of the flaps. A plurality of swivelling frames are arranged around the circumference of the nozzle and are separately hinged to the fixed structure for pivotal adjustment about axes perpendicular to the longitudinal direction of the nozzle. The control means comprise jacks operable to pivot the frames about their respective axes, and

the adjustable flaps are connected to the frames. The flaps comprise, in resect of each frame, two flaps each of which is hinged to the corresponding frame for positional angular adjustment with reference to that frame about an axis which has a component perpendicular to the pivotal axis of the frame concerned.



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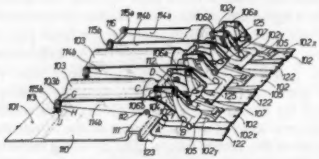
**3,837,580**

**NOZZLES HAVING AN ADJUSTABLE CROSS-SECTION**

**Andre Alphonse Mederic Leon Camboulives, Savigny-sur-Orge; Gerard Ernest Andre Jourdain, Evry, and Theophile Francois Le Maout, Cesson, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs d'Aviation, Paris, France**

**Filed Oct. 2, 1973, Ser. No. 402,836**
**Claims priority, application France, Oct. 6, 1972, 72.35502**
**Int. Cl. B64c** *15/06*
**U.S. Cl. 239—265.39** **1 Claim**



A jet propulsion nozzle comprising a plurality of actuated flaps articulated at their upstream ends about substantially tangentially disposed axes distributed circumferentially around the downstream portion of a fixed nozzle duct, said flaps being adapted, under the control of a plurality of actuators, to pivot about their respective axes in order to vary the cross-sectional area of the nozzle, said nozzle comprising furthermore a plurality of intermediate levers separate from the actuators and disposed respectively each between two consecutive actuated flaps, each of said levers being connected through the medium of connecting rods to the two consecutive actuated flaps and being itself articulated about a substantially tangential axis, wherein the flap axes and the intermediate lever axes are carried by a system of longitudinal side plates distributed circumferentially about the nozzle axis and themselves carried by the fixed duct of the nozzle and extending downstream beyond the downstream extremity of said duct, and wherein the geometric figure described, on the one hand by the respective points of articulation of one and the same connecting rod to a actuated flap and to an intermediate lever and on the other hand by the respective intersections with one of said side plates of the axes of said flap and said lever, is substantially a parallelogram which is capable of deforming during variations in cross-sectional area of the nozzle, while nevertheless maintaining one fixed side which is constituted by a straight line section extending within said plate and joining said intersections in which each actuator has a moving part which is fastened to a cross-bar which extends in a tangential direction, relative to the nozzle and connects the two connecting rods associated with the respective flap, and in which the trace of each of said cross-bars onto the plane of the associated deformable parallelogram is separated from the fixed side of said parallelogram. at any moment, by a distance which is less than the height of said parallelogram.

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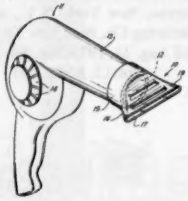
**3,837,581**

**HAIR DRYER NOZZLES**

**Eli Orsoff, Selden, N.Y., assignor to Continental Hair Products, Inc., Brooklyn, N.Y.**

**Filed Oct. 11, 1973, Ser. No. 405,361**
**Int. Cl. B05b** *1/24, 1/14;* **A45d** *20/12*
**U.S. Cl. 239—289** **10 Claims**



A nozzle for a hair dryer having a cylindrical barrel terminating in a circular output port. The nozzle includes a cylindrical section for frictionally engaging the output port end of the barrel, and a fluid accelerating section having an oblong opening for providing a flat main stream of air. The accelerating section includes a pair of arcuate surfaces which extend from the cylindrical section and define the long sides of the oblong opening. The arcuate surfaces include slots for providing auxiliary streams of air substantially parallel to the main stream. In one embodiment louver boards extend over the slots for directing the auxiliary streams.

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**3,837,582**

**BENEFICIATION OF NEW YORK STATE TALC**

**Tryggve Baak, Princeton, N.J., assignor to Cyprus Mines Corporation, Trenton, N.J.**

**Filed Dec. 27, 1972, Ser. No. 319,001**
**Int. Cl. B02c** *19/00*
**U.S. Cl. 241—4** **12 Claims**

Process of beneficiating Gouverneur, New York talc ore to produce a high purity, platy talc substantially free of tremolite. The process involves crushing the ore and irradiating the crushed ore with short wavelength ultraviolet radiation to cause the talc in the crushed ore to fluoresce predominantly white and the tremolite in the crushed ore to fluoresce a predominantly non-white color. The irradiated crushed ore is then separated into a first portion in which the fluorescent areas of the constituent rocks fluoresce predominantly white, and a second portion in which the fluorescent areas of the constituent rocks fluoresce a predominantly non-white color. The rocks in the first portion are crushed further preferably to a particle size of minus 100 Tyler mesh, and are subjected to at least one froth flotation step. The talc recovered from the froth formed during the last froth flotation step is characterized by a G.E. brightness about 90 and a tremolite content of less than 1.0 percent by weight.

3,837,583

## MULTI-STAGE JET MILL

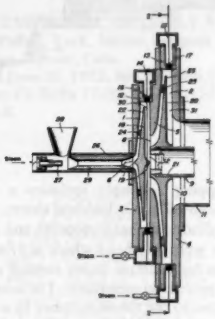
Joachim Kugelberg, Leverkusen; Carlo Servais, and Rolf Dieter Uihlein, both of Odenthal, all of Germany, assignors to Kronos Titan G.m.b.H., Leverkusen, Germany

Filed May 14, 1973, Ser. No. 360,353

Claims priority, application Germany, May 13, 1972, 2223441

Int. Cl. B07b 7/04

U.S. Cl. 241—39 8 Claims



An improved multi-stage jet mill is described which may, for example, be used for dry milling pigments.

3,837,584

## APPARATUS FOR GRANULATING THERMOPLASTIC STRANDS

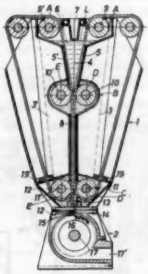
Heinz Lehr, Gelnhausen, Germany, and Walter Swarat, Elmhurst, Ill., assignors to Condux-Werk Herbert A. Merges KG, Wolfgang near Hanau, Germany

Filed Mar. 9, 1973, Ser. No. 339,947

Claims priority, application Germany, Mar. 15, 1972, 2212345

Int. Cl. B02c 21/00

U.S. Cl. 241—65 7 Claims



In an apparatus for granulating thermoplastic strands there is provided a feeding device which, at its downstream end is interlocked with a comminuting device. The strands are advanced by cooperating conveyor belts along a supply path in the feeding device and are introduced into the comminuting device. In the feeding device and in the granulating device there is contained a liquid coolant which has a uniform liquid level and in which the cooperating portions of the conveyor belts are submerged to ensure that the strands are comminuted in a condition in which their outer surface is already hardened, while their interior is still soft.

3,837,585

## GYRATORY CRUSHER WITH HYDRAULIC MEANS FOR LIFTING THE UPPER PART OF THE HOUSING FROM THE LOWER PART

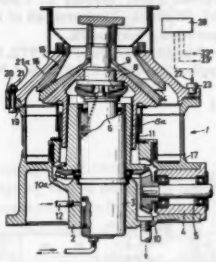
Hanns Decker, Cologne-Rath, and Heinz Hurtmanns, Cologne, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed July 12, 1972, Ser. No. 271,146

Claims priority, application Germany, July 15, 1971, 2135272

Int. Cl. B02c 2/04

U.S. Cl. 241—213 4 Claims



A gyratory crusher provided with a housing consisting of two superimposed parts provided with flanges traversed by bolts and nuts which releasably connect the two parts of the housing with each other and also provided with a plurality of hydraulically operating lifting devices arranged in apertures of one of the flanges and engaging the other flanges for lifting the upper part of the housing from the lower part of the same.

3,837,586

## APPARATUS FOR GRANULATING STRANDS OR BANDS OF MATERIAL, ESPECIALLY SYNTHETIC MATERIALS

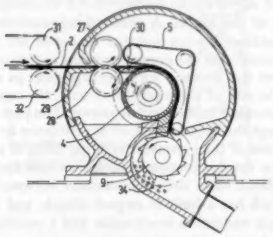
Otto Perschbacher, Schaafheim; Friedrich Hunke, Grossostheim-Ringheim, and Berthold Glaab, Wenighoesbach, all of Germany, assignors to Automatic Apparate-Machinenbau H. Hench GmbH, Grossostheim, Ostring, Germany

Filed Dec. 1, 1972, Ser. No. 311,386

Claims priority, application Germany, Dec. 6, 1971, 2160466

Int. Cl. B02c 23/02, 18/44

U.S. Cl. 241—223 9 Claims



The present apparatus for granulating elongated material includes a transport roller, and infeed and output tables arranged to extend substantially tangentially to the transport roller. A conveyor belt is wrapped around the transport roller and extends from one guide or drive roller adjacent the infeed table and another drive or guide roller adjacent the output table. A tool cooperating with the end of the output table away

from the transport roller effects the granulation of the elongated material. The region between the infeed table and the belt is generally funnel shaped. The region between the transport roller and the conveyor belt forms a sheet advance region which extends close to the end of the output table. The portion of the apparatus including the conveyor belt and the input table may be rotated to permit ready access to the end of the output table, which may be formed as a replaceable counter knife.

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**3,837,587**

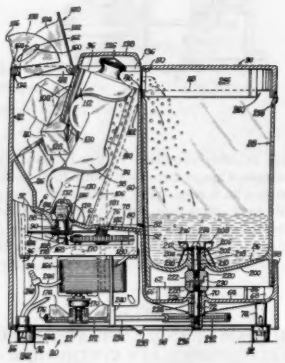
## COMBINATION ICE CRUSHER AND DRINK MIXER

**John Walter, Evergreen Park; Worthy L. Chambers, Lombard, and John M. Stipanuk, Elmhurst, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.**

**Division of Ser. No. 226,157, Feb. 14, 1972, Pat. No. 3,791,597. This application Oct. 10, 1973, Ser. No. 405,044**

**Int. Cl. B02c** *19/00*

**U.S. Cl. 241—260.1** **10 Claims**



A combination ice crusher-drink mixer appliance which serves either as an ice crusher or as a drink mixer or as a combination of the two whereby to provide crushed ice to a drink as it is being mixed. An electric motor is operably connected to an upwardly inclined ice-crushing auger which is rotatable in an ice-crushing barrel whereby ice cubes introduced to the lower end of the auger-barrel combination through a vertically disposed ice chute are simultaneously crushed, sized, and transported upwardly to a crushed ice discharge port at the upper end of the barrel. A crushed-ice-receiving and drink-mixing container has an agitator mounted off center in the bottom thereof with the container being selectively positionable adjacent the crushed ice discharge port in either of two positions. In one of these positions only, the agitator is automatically coupled to the electric motor. The path of ice movement through the appliance from the entrance to the ice chute to the bottom of the container is in the form of an inverted N and the ice crushing auger and barrel are formed of high strength plastic. The drive connection between the electric motor, which has a built-in impact clutch, and the auger includes a gear reduction mechanism and a modified universal-joint with the drive ratio therebetween being in the order of 100:1, the drive ratio between the electric motor and the agitator being in the order of 1:1. The ice chute has a cover which, when opened, defines an upward extension of the ice chute. The auger is readily removable from the barrel for cleaning and the container has a pouring spout with a strainer and a hand-grip formation. The components of the combination ice crusher-drink mixer appliance are nested together to provide a compact multi-purpose appliance which occupies a minimum amount of countertop space.

**3,837,588**

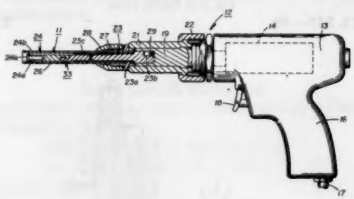
## COMPOSITE WIRE WRAPPING BIT

**James O. Chambers, Yukon, Okla., assignor to Western Electric Company, Incorporated, New York, N.Y.**

**Filed Apr. 27, 1973, Ser. No. 355,243**

**Int. Cl. H01r** *43/00*

**U.S. Cl. 242—7.06** **10 Claims**



A wire wrapping assembly includes a composite wire wrapping bit mounted in a cylindrical sleeve. The bit includes an elongated cylindrical shank member and a wear resistant, cylindrical wire wrapping head which is primarily of molded construction, as for example being formed of a pressed and sintered metal powder composition. The wire wrapping head may be connected to the shank member by a quick-releasable drive connection capable of permitting limited universal movement between the head and the shank member, and capable of imparting rotatable movement of the head in synchronism with the shank member. In the alternative, the wire wrapping head may be rigidly secured to the shank member.

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**3,837,589**

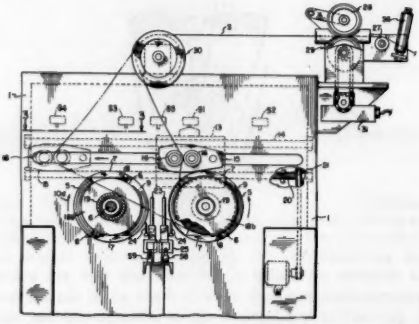
## APPARATUS AND METHOD FOR CONTINUOUS SPOOLING

**Frank B. Johnson, Middletown, and Theodore O. Palm, North Haven, both of Conn., assignors to Davis Electric Company, Wallingford, Conn.**

**Filed May 18, 1972, Ser. No. 254,717**

**Int. Cl. B65h** *54/02, 54/44*

**U.S. Cl. 242—25 A** **5 Claims**



Apparatus and method are disclosed for continuously spooling flexible stock material onto a pair of take-up spools rotatably mounted with their axis in parallel relationship to each other. The stock material is spooled first onto one of the take-up spools and when it is filled the stock material is automatically transferred to the other take-up spool for spooling thereon without interruption of the spooling operation. The apparatus is specially constructed to dependably and reliably

insure proper transfer of the stock material from one take-up spool to the other. For applications involving the spooling of insulated stock and the testing of the insulated stock for electrical defects as it is being fed to the take-up spools, the apparatus is provided with means for maintaining the linear rate of feed of the stock material substantially constant as the winding on each of the take-up spools takes place. Means are also provided for grounding the insulated cable to the apparatus.

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**3,837,590**

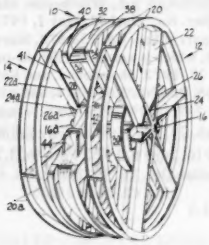
**CABLE REEL ASSEMBLY**

**Edward George Pollak, York, Maine, assignor to Johns-Manville Corporation, Denver, Colo.**

**Filed June 26, 1972, Ser. No. 266,196**

**Int. Cl. B65h *75/02*; B63b *21/52***

**U.S. Cl. 242—54 R** **10 Claims**



A cable reel assembly is disclosed herein and includes two outer cable support drums and a center cable support drum coaxially positioned around a common axle and between two, preferably spoked, annular reel frames also positioned coaxially around the common axle. The center drum, which is preferably of greater diameter than the outer drums, is separated from the outer drums by a pair of circumferential dividers positoned between the three drums. The assembly also includes three cables, each of which is connected at one end to a common cable connector having an elongated portion adapted to sit unconnected in a slot provided in the center drum. The dividers also include slots which are aligned with the center drum slot and which receive opposite end sections of the elongated connector portion. In this manner, the three cables can be wound around respective support drums without interferring with one another. Constructed in this fashion, the reel of the assembly will completely disconnect itself from the arrangement of interconnected cables after the latter have been unwound therefrom. Hence, the assembly is quite suitable for anchoring an object such as, for example, a buoy, where the cable would otherwise provide an undesirable drag to the anchor.

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**3,837,591**

**STANDS FOR REELS OF PAPER**

**William Frank Clarke, Bristol, England, assignor to Masson Scott Thrissell Engineering Limited, Summerstown, London, England**

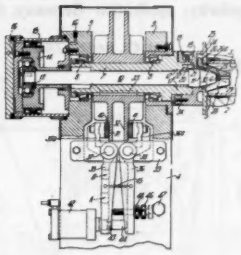
**Filed Sept. 17, 1971, Ser. No. 181,524**

**Claims priority, application Great Britain, Sept. 18, 1970, 44593/70**

**Int. Cl. B65h *19/00***

**U.S. Cl. 242—68.4** **8 Claims**

A stand for reels having a hollow core is provided with a pair of spaced housings having disposed therein axially aligned shafts which are movable toward and away from each other for insertion and removal from the hollow core. Each of the shafts is provided with segmental jaws which are radially expandable to engage the inner surfaces of the hollow core of the reels. A spring biased plunger is provided to release the housing and segmental jaws from the shaft.



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**3,837,592**

**DEVICE FOR AUTOMATICALLY POSITIONING THE WINDINGS FORMED BY A FLEXIBLE ELONGATED MEMBER STORED IN AN ANNULAR BASKET ROTATABLE ABOUT A VERTICAL AXIS**

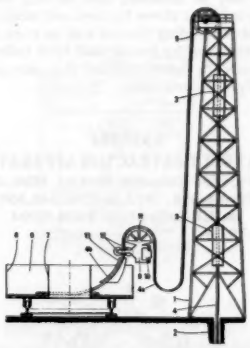
**Jean Thiery, Le Pecq; Remi Reynard, Montesson, and Yves Willm, Suresnes, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France**

**Filed Dec. 26, 1972, Ser. No. 318,614**

**Claims priority, application France, Dec. 24, 1971, 71.46684**

**Int. Cl. B21c *47/00***

**U.S. Cl. 242—83** **12 Claims**



Device for automatically positioning the windings of a flexible elongated element in a storage annular basket comprising means for drawing said flexible element and forming a loop portion thereof free of tensile stress, means for guiding the introduction of said flexible element into said basket, means for driving said basket in rotation, means for controlling the rotation of said basket in response to the feeding rate of the flexible element thereto and means for controlling, in response to the rotation of said basket, said guiding means and the length of said loop.

**3,837,593**

## SUPPORTING-ROLLER REELING APPARATUS

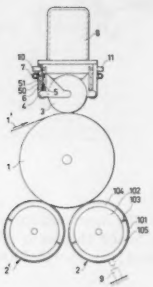
**Gerhard Walter Dorfel, Weilheim-Teck, Germany, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland**

**Filed Sept. 22, 1972, Ser. No. 291,408**

**Claims priority, application Germany, Sept. 24, 1971, 2147673**

**Int. Cl. B65h** *17/08*

**U.S. Cl. 242—66** **8 Claims**



In a reeling apparatus for moving webs, such as paper webs, irregular tensions on the web due to thickness variation in the same are eliminated by providing an even pressure along the reel between the reel and at least one driven supporting roller supporting the reel and rotating it by circumferential contact. The invention is specifically applicable to the reeling of barrel shaped reels or reels of similar form deviating more or less regularly from the ideal cylindrical shape. It provides sensor means in contact with the reel for sensing the mantle shape thereof, said sensor means operating measurement converter means transmitting signals based upon said mantle shape. These signals are received by a control unit controlling the deflection or bending of the supporting roller, which thus must be of the known type having controllable deflection. The sensor elements may be mounted onto several load roller arranged closely together above the reel and independently vertically movable but loading the reel with an even line pressure. This may be achieved by having said load rollers pneumatically or hydraulically controlled and thus also pneumatically or hydraulically interconnected.

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**3,837,594**

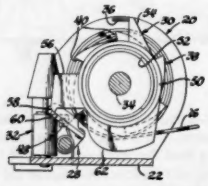
## SEAT BELT RETRACTOR APPARATUS

**Gerald F. Lewis, 1850 Columbia, Berkley, Mich. 48072**

**Filed Apr. 6, 1972, Ser. No. 241,539**

**Int. Cl. A62b** *35/02;* **B65h** *63/04*

**U.S. Cl. 242—107.4** **12 Claims**



Seat belt retractor apparatus having a spring biased latching device for locking the seat belt in a selected extended position. The latching device incorporates a latch that is releasably held in an unlatched position by a condition responsive latch holding device so that the seat belt user is permitted free movement and also to preclude premature latching prior to the belt being buckled. The condition responsive latch holding device responds to inertia forces in any direction acting on the retractor apparatus and when of a certain magnitude will release the latch for movement to the latched position. A latch positioning device is also included that prevents ratcheting during rotation of the belt in the belt retracted direction, that can be used to reset the holding device, and that insures that latching occurs in the event that the condition responsive latch holding device malfunctions. This interaction of the two devices is facilitated by a lost motion connection therebetween.

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**3,837,595**

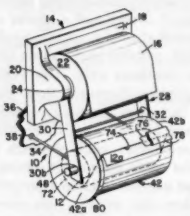
## SUPPLEMENTAL SHEET-DISPENSING DEVICE FOR A TOILET-TISSUE DISPENSER

**Philip Boone, 15 Fenwick Rd., Winchester, Mass. 01890**

**Division of Ser. No. 356,143, May 1, 1973, which is a continuation-in-part of Ser. No. 238,578, March 27, 1972, Pat. No. 3,744,448, which is a continuation-in-part of Ser. Nos. 678,600, Oct. 27, 1972, abandoned, and Ser. No. 715,768, March 25, 1968, Pat. No. 3,652,174, and a continuation-in-part of Ser. No. 257,745, May 30, 1972, abandoned, and Ser. No. 334,309, Feb. 21, 1973, which is a continuation-in-part of Ser. No. 48,916, June 6, 1970, Pat. No. 3,707,945. This application Dec. 26, 1973, Ser. No. 428,225**

**Int. Cl. B65h** *1/06*

**U.S. Cl. 242—55.3** **26 Claims**



A compact auxiliary device providing wetted or self-wetting sheets for releasable proximate mounting in conjunction with a conventional toilet-tissue dispenser of dry sheets; comprises an inexpensive container or magazine component pre-loaded with the supplemental sheets. The magazine can be snapped into functional position rapidly. It serves an improved health care and cleanliness function.

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**3,837,596**

## SELF-THREADING TAKE-UP SPOOL DEVICE

**Richard Edward Lagergren, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.**

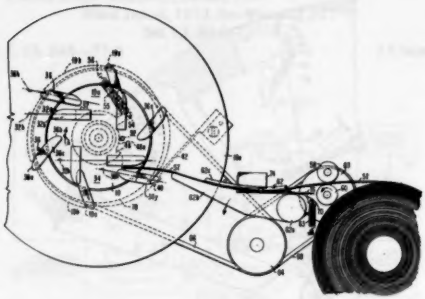
**Filed May 4, 1973, Ser. No. 357,428**

**Int. Cl. B65h** *75/28*

**U.S. Cl. 242—74** **10 Claims**

A take-up device for a paper web or the like having an inner rotating hub and an outer, initially stationary spool, with the hub and spool carrying vanes between which an advancing paper web may be gripped so that the spool then begins rotation to wind up the web on the outer ends of its vanes. Index-

ing mechanism for the outer spool is provided so that a web guide directs the advancing paper web between two of the vanes of the initially stationary outer spool, and the indexing



mechanism includes a spring for returning the outer spool to this non-blocking position for the web when a completed roll of web is removed from the spool.

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**3,837,597**

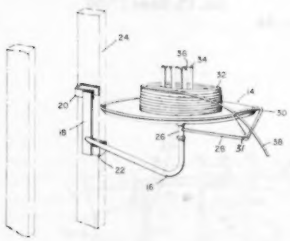
**COILED CABLE DISPENSER**

**Francis Kurt Bourhenne, 1308 1/2 Anaheim St., Harbor City, Calif. 90710**

**Filed Feb. 5, 1973, Ser. No. 329,659**

**Int. Cl. B65h** *49/00;* **D01h** *7/16*

**U.S. Cl. 242—129** **4 Claims**



A coiled cable dispenser for use by the building trade in constructing buildings. The coiled cable usually packaged in 250 foot rolls is centrally located on a rotatable table. A spindle mounting assembly pivotally supports the table at one end and contains a pair of spaced apart U shaped members attached to each other by a single arm at the other end. The U shaped members are adapted to fit over opposite sides of a conventional two by four stud member which are usually located 16 inches on center. The cable is dispensed from the periphery of the coil through a cable guide assembly that is pivotally attached to the spindle mounting assembly below said rotating table. The table is frictionally restrained thereby allowing the construction worker to pull a selected amount of cable from the rotating table.

**3,837,598**

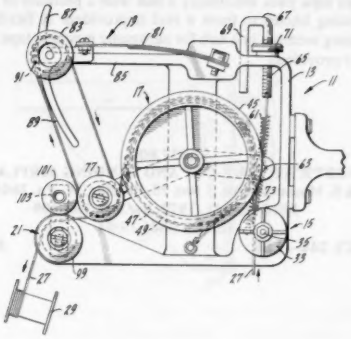
**WIRE TENSIONING APPARATUS**

**Maurice H. Brown, P.O. Box 367, Palos Heights, Ill. 60463**

**Filed Oct. 3, 1973, Ser. No. 403,112**

**Int. Cl. B65h** *59/16, 59/40*

**U.S. Cl. 242—155 R** **3 Claims**



An apparatus for use on a wire winding machine to apply tension and to accurately indicate the tension in the wire as it is pulled therethrough even where the pull on the wire fluctuates rapidly.

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**3,837,599**

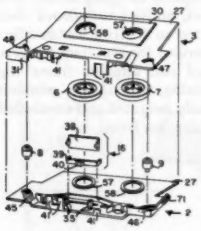
**CASSETTE**

**Augustine A. Souza, San Jose, Calif., assignor to Polygon Concepts, Inc., Menlo Park, Calif.**

**Continuation-in-part of Ser. No. 136,365, April 22, 1971. This application May 26, 1972, Ser. No. 257,436**

**Int. Cl. G03b** *1/04;* **G11b** *15/32, 23/04*

**U.S. Cl. 242—199** **6 Claims**



A cassette comprising a pair of identical sleeves in mating relationship enclose a tape reel and hub assembly, a tape guiding and tensioning member assembly and a tape back-up pressure assembly. The sleeves are inserted within a body member and removably held therein mechanically. The construction eliminates the need for sonic welding and liquid bonding. The elimination of undercuts in the design and the above method of assembly permits the use of low cost materials and manufacturing techniques. For tape control during tape run-up, running, and changing of the direction of tape movement there is provided tape guiding and tensioning members in the form of a plurality of self-adjusting idler rollers which absorb tape shock and slacks for reducing whipping, looping, spilling and other tape jamming events. A plurality of cantilever

mounted resilient spring-like members are further provided for applying a variable degree of retarding force through friction to tape reel hubs to further reduce tape jamming. To permit removal of the sleeves and various assemblies enclosed therein, the sleeves are provided with means for manually releasing the sleeves from the body member. In an alternative embodiment, a tape hub or hub ring with diametrically opposed raised portions is provided for reducing friction. For improved tape pack uniformity a hub with a plurality of radially extending blades to form a reel is provided. A flexible tape retaining member in a hub for automatic machine tape loading is also provided.

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**3,837,600**

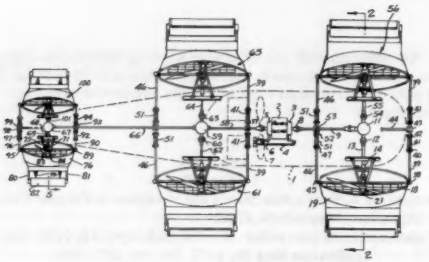
## VERTICAL TAKE-OFF AND LANDING AIRPLANE

**Ralph S. Mason, Rt. No. 1 Box 75, Proctor, W. Va. 26055**

**Filed May 21, 1973, Ser. No. 362,309**

**Int. Cl. B64c** *29/04*

**U.S. Cl. 244—12 R** **8 Claims**



An aircraft capable of flying in any direction by means of driven propellers, housing turbulence eliminators, wings and ailerons supported on the front and middle sides of an airplane frame and controlled for simultaneous pivoting in a direction longitudinally of said airplane frame together with driven propellers, housing, turbulence eliminators, rudders and elevators pivotally mounted and controlled at the sides of the tail end of said airplane frame.

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**3,837,601**

## AERODYNAMIC SLOT CLOSING MECHANISM

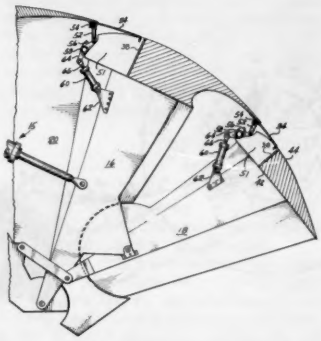
**James Byron Cole, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.**

**Filed Mar. 9, 1973, Ser. No. 339,645**

**Int. Cl. B64c** *21/04*

**U.S. Cl. 244—42 DB** **12 Claims**

In present day aircraft, the wing normally has two or more airfoil segments chordwise thereof, and the segments are extendible and retractable in relation to one another so that the adjacent edges thereof open and close an aerodynamic slot therebetween. According to the invention, an auxiliary closure member is provided on the slot-defining edge portion of one of the segments, which is shiftable in relation to the segments when the slot is open, between a position in which the member closes the slot, and a position in which the slot is reopened. In the reopened position, the closure member fairs into the edge portion of the one segment, relatively



peripherally of the slot, whereas in the closure position, the member fairs into a chordwise surface of the wing, relatively crosswise of the slot.

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**3,837,602**

## MOUNTINGS FOR POWER PLANTS

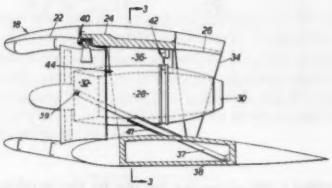
**John Albert Mullins, Chellaston, England, assignor to Rolls-Royce (1971) Limited, London, England**

**Filed Feb. 26, 1973, Ser. No. 336,044**

**Claims priority, application Great Britain, Mar. 4, 1972, 10242/72**

**Int. Cl. B64d** *27/00*

**U.S. Cl. 244—54** **9 Claims**

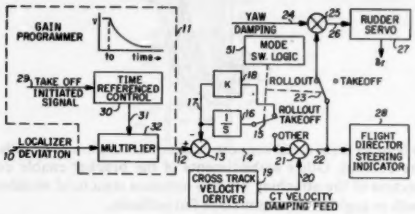


An aircraft is provided with overwing mounted ducted fan gas turbine engines, the engines being mounted within nacelles formed on the upper surface of the wing main spar. The nacelles provide a part of the engines fan flow ducts and also provide attachment points to which the engines are attached in a manner which transmits thrust loads directly to the wing main spar.

## 3,837,603
## LATERAL AXIS ROLLOUT, GO-AROUND, TAKEOFF CONTROL FOR AIRCRAFT

Elmer L. Schultz, Marion, Iowa; Robert F. Tribuno, Santa Monica, Calif.; John C. Hall, Cedar Rapids, Iowa, and Theodore J. Schuldt, Jr., Thousand Oaks, Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed Jan. 4, 1973, Ser. No. 321,117
Int. Cl. B64c 13/18
U.S. Cl. 244—77 A 1 Claim




Automatic control of aircraft which provides runway centerline guidance during landing rollout, takeoff roll and low altitude initiated go-around flight modes, wherein lateral dispersion is minimized during a go-around manuever for the case of an outboard engine.

## 3,837,604
## MEANS FOR CONTROLLING THE DEPLOYMENT AND THE DEVELOPMENT OF A PARACHUTE CANOPY

John T. Matsuo, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

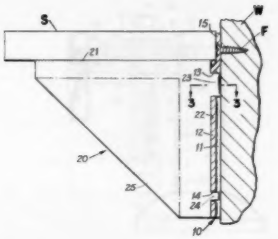
Filed Oct. 6, 1972, Ser. No. 295,769
Int. Cl. B64d 17/22
U.S. Cl. 244—152 6 Claims

A simple technique is proposed for achieving near-optimum parachute canopy deployment without the need for additional equipment by bundling together the suspension lines and forming therein a series of gradually releasable daisy-chain slip knots. The daisy-chained suspension lines are connected to the canopy skirt by means of a releasable locking device which enables the suspension lines gradually to unravel in a taut condition until the skirt is released by the locking device enabling the drag-producing surface fully to inflate.

## 3,837,605
## SHELF BRACKETS

Marcel Clarence Sicard, 1666 N. Rolling Acres, New Haven, Conn. 06410

Filed Sept. 13, 1972, Ser. No. 288,504
Int. Cl. A47b 96/06
U.S. Cl. 248—235 1 Claim

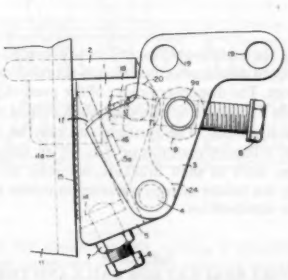


A shelf bracket having a vertical surface adapted to engage a wall and having a plate-like tab extending upwardly therefrom to be attached to the wall by a fastener and hidden from view by the supported shelf.

## 3,837,606
## CLAMPING MECHANISM FOR PLATFORM

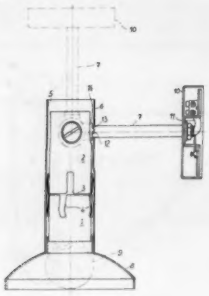
Akio Hikai; Yoshiyuki Kobayashi, and Kazuyoshi Furuta, all of Shimizu, Japan, assignors to Nippon Kohan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,767
Claims priority, application Japan, Dec. 29, 1971, 46-2639
Int. Cl. E04g 3/04
U.S. Cl. 248—242 2 Claims



In the clamping mechanism for a working platform, which is temporarily set up in the constructing of structures, e.g., a building, a hull or the like, an improved clamping mechanism wherein a cotter having counter teeth is so fitted as to be slidable between a flange of fixture of a clamp body, which is arranged along side wall of structure, and said body, and a rotatable cross arm is further connected to said clamping body. The setting-up and taking down of this mechanism is easily accomplished.

**3,837,607**
**LIGHTING FIXTURE**
**Kurt Hesse, 492 Lemgo, Waterfohr 38, Germany**
**Filed Jan. 29, 1973, Ser. No. 327,369**
**Claims priority, application Germany, Jan. 31, 1972, 7203465**
**Int. Cl. F16l** *27/00*
**U.S. Cl. 248—278** **4 Claims**



A lighting fixture including a bulb socket mounted on an extension arm, wherein means for tilting and rotating the bulb socket are formed as part of the socket assembly.

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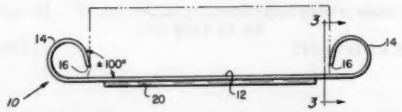
**3,837,608**
**DISPENSER HOLDER**
**Edward J. Simon, 307 Henry Ave., Sewickley, Pa. 15143**
**Filed Aug. 9, 1972, Ser. No. 278,938**
**Int. Cl. F16m** *13/00*
**U.S. Cl. 248—313** **2 Claims**




A holder for pasteboard dispensers is provided to position the paste board dispensers conveniently for removal of materials therefrom. The dispenser holder of the present invention is formed from a single piece of spring metal shaped to retain the pasteboard dispenser. The spring metal may be attached to surfaces by adhesive material or may be an integral part of other items, such as shelf brackets, whereby the dispensers retained by the holder occupy a minimum usable space in the home, or in automobiles.

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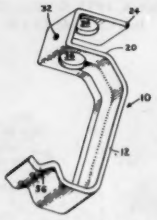
**3,837,609**
**SUPPORT BRACKET FOR RAILS AND THE LIKE**
**Morton A. Weiss, Springfield, and Bernard S. Speckhart, Short Hills, both of N.J., assignors to White Machine Co., Kenilworth, N.J.**
**Filed Sept. 18, 1972, Ser. No. 290,023**
**Int. Cl. E01b** *25/22*
**U.S. Cl. 248—317** **10 Claims**

A rail support bracket is formed from a stamping of a single sheet of metal. One end of the sheet is bent to form a "U" shaped attaching head for fastening the bracket to various support members. Two axially aligned holes can be formed in the arms of the U shaped attaching head to receive a suspension pipe to which the bracket is to be attached. A single jam screw is threadably engaged in the third side of the attaching head of the support bracket to bear against the suspension pipe to force the pipe against holes in the attaching head in order to lock the bracket in place. The other end of the sheet




is bent to form a rail support cradle for attachment of rails to the bracket. Other embodiments of the bracket enable connection of the attaching head to common structural members, such as angle irons, channels or flat surfaces.

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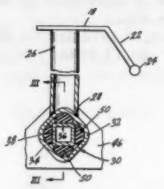
**3,837,610**
**PLAYGROUND SUPPORT USING COMPRESSIBLE ELASTOMER ELEMENT**
**Ronald L. Ewers, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.**
**Continuation-in-part of Ser. No. 125,629, March 18, 1971, abandoned. This application Oct. 2, 1972, Ser. No. 293,784**
**Int. Cl. F16j** *1/38*
**U.S. Cl. 248—374** **1 Claim**




A resilient support for playground apparatus upon which an occupant is seated including a seat supporting member and a fixed support wherein an elastomer, such as rubber, is interposed between the seat support and fixed support such that an oscillating pivotal movement about an axis compresses the elastomer, and produces a resilient support, and oscillation, of the seat. The playground equipment includes a polygonal support, and the seat includes a polygonal member extending through the support. The compressible elastomer elements are so disposed between the polygonal members as to be compressed during relative angular rotation occurring between the polygonal members.

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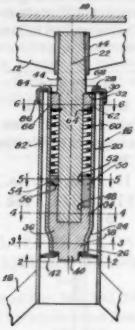
**3,837,611**
**SWIVEL CONSTRUCTION FOR A CHAIR**
**Nolan K. Rhoades, Beloit, Wis., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.**
**Filed Oct. 1, 1973, Ser. No. 402,347**
**Int. Cl. B60n** *1/02*; **F16m** *13/00*
**U.S. Cl. 248—417** **5 Claims**

An improved chair swivel includes a housing tube which may be attached to the chair legs. Within the tube is a stationary cam and a movable cam. The movable cam is attached

to a spindle that engages the chair seat. The movable cam is biased into engagement with the stationary cam and has a normal rest position. Upon rotation of the chair seat, the movable



cam is driven from the normal rest position by the spindle. Release of the force on the chair seat permits the seat to return to its normal rest position.

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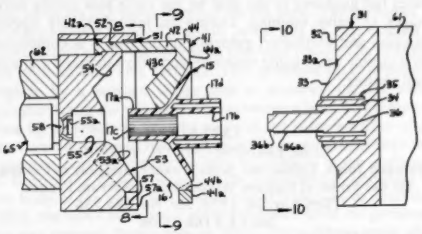
**3,837,612**

## MOLD APPARATUS FOR MIXED FLOW IMPELLER

**Elmer M. Deters, Muscatine, Iowa, assignor to Red Jacket Manufacturing Company, Davenport, Iowa**

**Filed June 1, 1973, Ser. No. 366,074**
**Int. Cl. B29c** *1/06*
**U.S. Cl. 249—105** **10 Claims**



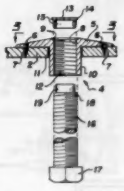
A mold apparatus for a mixed flow impeller having radially curved and axially pitched vanes at the front side of a conical impeller body. The mold apparatus has a rear mold section for shaping the rear side of the impeller and two interfitting front mold sections for forming the conical front face and the radially curved and axially pitched vanes on the front face. The two front mold sections are axially movable relative to the rear section and relative to each other and interfit along parting lines located angularly intermediate adjacent vane forming cavities and such that one of the front mold sections has a plurality of rigidly interconnected segments which define the trail wall of the several vane forming cavities and the other front mold section has a corresponding number of rigidly interconnected segments which define the lead wall of the several vane forming cavities.

**3,837,613**

## DEVICE FOR STRIPPING FORMS FROM CAST CONCRETE STRUCTURES

**John Sontag, 7438 18th Ave., Burnaby, B. C., Canada**

**Continuation-in-part of Ser. No. 204,654, Jan. 31, 1972, abandoned. This application Mar. 19, 1973, Ser. No. 342,791**
**Int. Cl. B28b** *7/10*
**U.S. Cl. 249—66** **10 Claims**



A device having an apertured reaction plate for engagement against the concrete forming face of a concrete form, and a hollow bushing extending coaxially from the reaction plate for engagement through a hole in the form. A plug is provided for the aperture to prevent ingress of concrete and means such as a bolt or a hydraulic or pneumatic ram are provided for exerting a force through the hollow bushing and plug against the concrete to effect separation of the form from the concrete.

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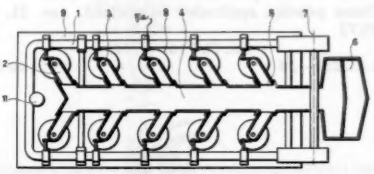
**3,837,614**

## CASTING APPARATUS WITH SLIDABLY MOUNTED BRANCH RUNNERS

**Pal Palovits, Ajka; Tiborne Laar, Budapest; Endre Mucsy, Budapest; Tibor Laar, Budapest, and Janos Harmath, Ajka, all of Hungary, assignors to Femipari Kutato Intezet, Budapest and Ajka, Hungary**

**Filed June 12, 1973, Ser. No. 359,360**
**Int. Cl. B22d** *35/04*
**U.S. Cl. 249—108** **7 Claims**



Apparatus for simultaneously casting a plurality of aluminum ingots comprises a vertically swinging metal frame of substantially zero coefficient of thermal expansion, supported above an elongated series of molds. A main runner for molten aluminum extends lengthwise of the frame and the series of molds. A container supplies molten aluminum to the main runner. To solve the problems of thermal expansion of the main runner, branch runners, one individual to each mold, are supported not by the main runner but rather by the frame and are movable relative to the main runner. Downward vertical swinging movement of the assembly feeds molten aluminum to the runners, while upward swinging movement of the assembly returns excess aluminum to the container. As a result, ingots of uniform size, good surface quality and uniform crystalline properties are achieved.

### 3,837,615
### PROCESS AND DEVICE FOR THE CONTROL OF A MEMBRANE CHANNEL-VALVE

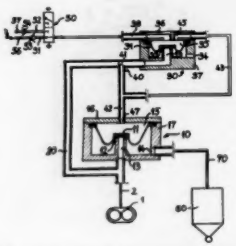
**Frans Joris Espeel, Minneapolis, Minn., assignor to Gebrueder Buehler AG, Uzwil, Switzerland**

**Filed Feb. 20, 1973, Ser. No. 334,062**

**Claims priority, application Switzerland, Feb. 20, 1972, 2834/72**

**Int. Cl. F16k** *31/165*

**U.S. Cl. 251—29** **15 Claims**



A membrane channel-valve is disclosed, having a switching membrane responsive to the pressure in a switching chamber therein to open or close a conduit to control gas flow between pressure medium intake and outflow connections. The channel-valve is controlled by a conversion valve forming a seal between a control medium intake line and a control medium output line so that when closed there is a static pressure in the intake line and when open there is a gas current flow through the intake line. A jet pump is provided having an exit opening in the control medium intake line and an entrance opening in the switching chamber of the channel-valve, to pressurize the switching chamber during static pressure conditions to close the channel-valve and to provide a low pressure therein during current flow conditions to open the channel-valve.

### 3,837,616
### PIVOTING VALVE

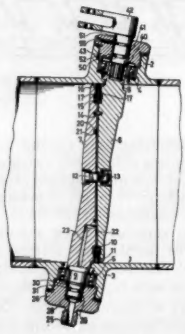
**George Castriota-Scanderbeg, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland**

**Filed Apr. 11, 1973, Ser. No. 350,146**

**Claims priority, application Switzerland, Apr. 21, 1972, 5905/72**

**Int. Cl. F16k** *31/143*

**U.S. Cl. 251—30** **10 Claims**



The valve body is formed of two disc-like portions which are sandwiched together after mounting and which carry an annular inflatable sealing member in bridging relation across a gap between the two portions. A duct is formed in one portion to extend to a pressure medium supply source which is controlled to supply a pressure fluid via the gap to the sealing member to inflate the same into sealing contact in a pipeline.

Control means are provided to deflate the sealing member prior to opening of the valve and to inflate the sealing member after closing of the valve.

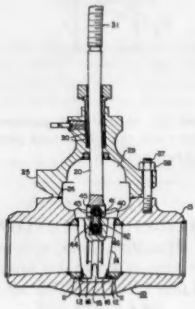
### 3,837,617
### GATE VALVE

**Harry E. Eminger, Valencia, and Alan H. Campbell, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Apr. 19, 1973, Ser. No. 352,823**

**Int. Cl. F15k** *3/314*; **F16k** *3/316*

**U.S. Cl. 251—87** **12 Claims**



A gate valve is disclosed having an improved operating lifetime. A flexible connection is provided between the valve stem and the valve disc which is substantially free from binding and allows translatory motion of the valve disc. A coordinated guide system utilized with the flexible connection assures full guidance of the disc by the valve seat during initial stages of valve opening. During an intermediately opened position and thereafter, guidance of the disc is accomplished by a closely fitted guide which prevents flow induced vibration and chatter.

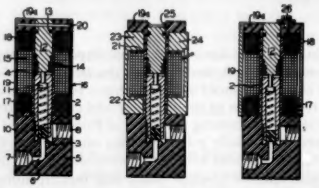
### 3,837,618
### ELECTRO-PNEUMATIC VALVE

**Bernard Juhel, Epinay sur Seine, France, assignor to Compagnie des Freins et Signaux Westinghouse, Sevran, France**

**Filed Apr. 26, 1973, Ser. No. 354,756**

**Int. Cl. F16k** *31/06*

**U.S. Cl. 251—129** **13 Claims**



An electrovalve comprising a core plunger disposed in the bore of a non-magnetic tubular member for movement between end stops arranged to cooperate with the core plunger to control fluid pressure flow in passageways con-

nected to the bore via the end stops. The tubular member is arranged to receive an induction coil in an annular recess formed about the periphery of the tubular member so as to surround a portion of the core plunger and a portion of a magnetic plug providing one of the end stops. Pole pieces at each end of the coil concentric with the bore are interconnected by an annular sleeve via which the magnetic flux lines of the coil are channeled in providing a magnetic member which connects magnetic force across the tubular member to the plug and core plunger to effect movement of the latter between its end stops when the coil is energized.

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**3,837,619**

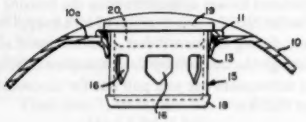
## ADJUSTABLE VALVE FOR USE ON IRRIGATION PIPES

**Roger M. Sherman, 3381 Stevens Creek Blvd., San Jose, Calif. 95117**

**Continuation-in-part of Ser. No. 353,746, April 23, 1973, Pat. No. 3,794,294. This application Jan. 14, 1974, Ser. No. 432,868**

**Int. Cl. F16k** *31/58*

**U.S. Cl. 251—145** **2 Claims**



An adjustable valve for use on irrigation pipes to control or to shut off the water flow. This device is provided with a flexible grommet that is inserted into a hole in the irrigation pipe and supports the valve member on the pipe. The grommet is provided with a tapered inwardly projecting lip that extends a short distance into the irrigation pipe and frictionally engages the body of the valve member. This grommet lip is stretched slightly by a tapered flange that is provided on the valve member when the valve member is inserted into the grommet. This lip contracts to grip the body of the valve member after the tapered flange of the valve member is pressed through the grommet. The valve member may be adjusted in the grommet to control the water flow out of the pipe through openings in the body of the valve member. When it is desired to close the valve, the valve member is moved outward until the grommet lip and tapered flange engage each other. These parts also limit the outward withdrawal of the valve member from the grommet.

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**3,837,620**

## BUTTERFLY VALVE HAVING AN IMPROVED STEM SEAL

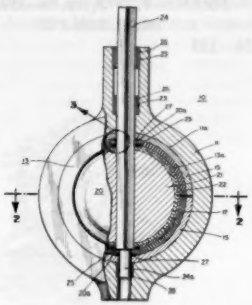
**Edward D. Malloy, Westmont, N.J., and William L. Parsons, Jr., Drexel Hill, Pa., assignors to Garlock, Inc., Palmyra, N.Y.**

**Filed Nov. 5, 1973, Ser. No. 412,764**

**Int. Cl. F16k** *1/226*

**U.S. Cl. 251—306** **12 Claims**

This invention utilizes the pressure of the fluid media being controlled by the butterfly valve to bring about a sealing action around the axis of the valve disc to provide an improved stem seal through the means of a double lip seal operating in a flanged sleeve. The sleeve is an independent member riding



between the disc axis and the valve liner thereby preventing the seal from being broken by the radial distortion of the liner when the disc is in a closed position.

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**3,837,621**

## HYDRAULIC JACKS FOR TENSIONING REINFORCEMENT ELEMENTS

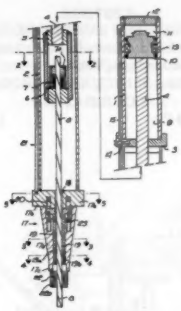
**Juan Bautista Ripoll Gomez, Consejo de Ciento, 304, Barcelona, Spain**

**Filed Sept. 15, 1972, Ser. No. 289,450**

**Claims priority, application Spain, Sept. 27, 1971, 173142**

**Int. Cl. E21b** *19/00*

**U.S. Cl. 254—29 A** **6 Claims**

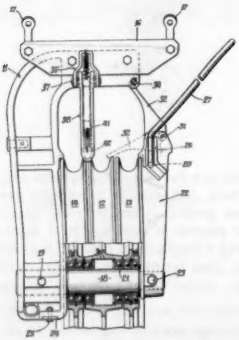


A hydraulic jack for tensioning reinforcing elements such as wires, rods, bars, cables or the like having a nose member with a longitudinal groove extending from its mouth so that the jack can be placed in position by a lateral movement. A plunger having a longitudinal channel is adapted to slide in the groove of the nose member and the rod to be tensioned is arranged in the channel of the plunger. A number of rams are mounted in the nose member to urge the plunger against biasing return springs towards the mouth to drive home anchor wedges in an anchoring plate for anchoring the rod. A profile member is attached to the nose member. The rod is tensioned by a traction gripper head mounted on a piston rod of a double-acting hydraulic assembly, which is mounted at the end of the profile member opposite the nose member. The profile member has a longitudinal channel which is aligned with the channel of the plunger and the groove of the nose member. One edge of the profile member is turned back to provide a further protection channel for a hydraulic duct for the rams associated with the plunger.

3,837,622
**MANHOLE COVER PULLER AND METHOD**
Myron C. Gale, 592 S. 700 E., St. George, Utah 84770
Filed Mar. 9, 1973, Ser. No. 339,563
Int. Cl. B66f 3/00
U.S. Cl. 254—131 3 Claims

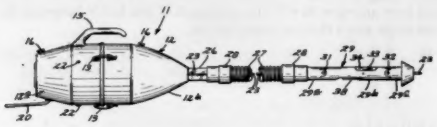
A device for pulling a manhole cover comprises an elongated rod having a straight upper portion and an angled lower portion extending normally to the axis of the upper portion and from the lower end thereof, a stop member secured to the upper portion adjacent the lower end and opposite the lower portion, and a handle at the upper end of the upper portion. The device is used by inserting the angled portion into an orifice on the manhole cover and pulling the upper portion upwardly and away from the cover so that the short lower portion acts as a lever and lifts the side of the manhole cover closest to the orifice.

3,837,623
**HELICOPTER BUNDLE BLOCK**
William H. Chadwick, Jr., Rossville, Ga., assignor to Sherman & Reilly, Inc., Chattanooga, Tenn.
Filed Dec. 3, 1973, Ser. No. 420,953
Int. Cl. E21c 29/16
U.S. Cl. 254—134.3 PA 3 Claims



Bundle block having plurality of axially aligned sheaves for simultaneously stringing two or more conductors, with means for receiving a pilot or pulling line from a helicopter and guiding it over the outside conductor sheave or sheaves and onto the center or pulling line sheave and a guard assembly for preventing further axial inward movement of the pilot or pulling line onto the conductor sheave or sheaves mounted inwardly of the center or pulling line sheave.

3,837,624
**APPARATUS FOR INSTALLING PULL LINES**
Thomas G. Dandurand, 3195 Elcanto Dr., Colorado Springs, Colo. 80907
Filed Sept. 28, 1973, Ser. No. 401,619
Int. Cl. E21c 29/16
U.S. Cl. 254—134.4 23 Claims



The disclosure is directed to apparatus for pressurizing and installing a pull line into conduit. Each of the two embodiments disclosed consists of a portable housing defining an internal pressure chamber in which a predetermined length of line or cord is stored. The housing has an outlet to which a flexible hose is connected, the hose terminating in a pressure fitting which sealably engages the conduit end. The line or cord is threaded through the hose and pressure fitting, and a carrier adapted to move through the conduit upon application of pressure is removably connected to the cord end. An electrically operated blower disposed within the housing generates pressure within the chamber, which in turn is applied through the pressure fitting to the conduit. The carrier is accordingly moved through the conduit by the pressure, carrying the cord with it for subsequent use as a pull line for electrical conducting wire or the like.

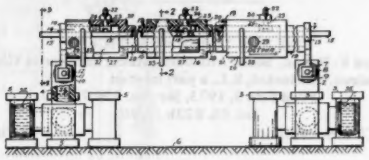
3,837,625
**WEDGE MEMBER**
Nils Gosta Loov, Ersmark, Sweden, assignor to Looveverken Raufoss AB
Continuation of Ser. No. 131,608, April 6, 1971, Pat. No. 3,734,549. This application Feb. 23, 1973, Ser. No. 335,386
Claims priority, application Sweden, Apr. 23, 1970, 5660/70
Int. Cl. B66f 13/00
U.S. Cl. 254—104 1 Claim

A wedge member which is constructed so that it is easy to observe when the wedge has been driven in sufficiently far to establish the desired rigidity of the wedge connection.

3,837,626
**DETACHABLE SAFETY WARNING DEVICE**
Herd Vrill Dixon, Route No. 1, Box 208, Montgomery, La. 71454
Filed June 26, 1973, Ser. No. 373,894
Int. Cl. E01f 13/00
U.S. Cl. 256—64 4 Claims

The detachable safety warning device invention utilizes posts with weighted feet connected by rod or cable spanning the distance between said posts with socketed connected tubular pipe bodies having longitudinal slots running the full length of each pipe to enable the quick assembly of same over said rod or cable and quick detaching of said pipes from said rod or cable stretched between said posts. The device is used to locate across roads in repair or under construction with

writings and/or colored safety warning displays painted on or attached to a single pipe or a series of pipes joined together and mounted on said rod or cable. Said pipes, preferably, are to be made of plastic or other suitable light weight material. Thus, is an oncoming vehicle on the roadway did by accident collide with safety warning device it would not cause any damage or very slight damage to the vehicle or the driver and



passengers therein. The feet on the posts are weighted with water, dirt or other easily accessible materials which may be dumped when said device is to be moved to another location. Said feet are open at their tops so that the weighted materials may be dumped therefrom and said device may be dis-assembled, handled and transported to another location for use in a facile manner.

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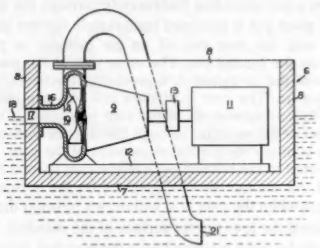
**3,837,627**

## METHOD AND APPARATUS FOR GASIFYING A LIQUID

**Leonard H. Sence, Milford, and Thomas E. Sutton, Springdale, both of Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Filed June 7, 1972, Ser. No. 260,633**
**Int. Cl. B01f *3/04***
**U.S. Cl. 261—29** **2 Claims**



Floating apparatus for introducing gas into a liquid utilizing a centrifugal pump with its inlet only partially submerged below the liquid level so that both liquid and gas are drawn into the pumping chamber. The gas and liquid are agitated in the pumping chamber and discharged from the pump as a mixture of gas and liquid.

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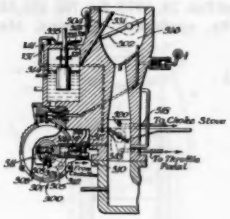
**3,837,628**

## INDUCTION SYSTEM

**Earl Bartholomew, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.**

**Continuation-in-part of Ser. No. 725,243, Jan. 29, 1968, Pat. No. 3,523,680. This application Dec. 9, 1969, Ser. No. 883,566**
**Int. Cl. F02m *1/10***
**U.S. Cl. 261—39 B** **1 Claim**

Gasoline engine induction system for automobiles and the like provides less emission of undesirable exhaust products by having carburetor without an idle jet so that engine idles on a lean main jet with small enrichment arranged for idle as against off-idle operation. Enrichment can be provided as by having the closing of the throttle open an external vent in the carburetor bowl, or by having a supplemental fuel jet opening in throttle barrel alongside idle position of downstream tip of throttle blade. Automatic choke can also be operated by mixture taken from downstream of carburetor venturi, heated,



and delivered to thermally responsive choke actuator. Above features can be incorporated in a single small primary carburetor that is combined with one or two large secondary carburetors used for high power operation. Supplemental heating can be provided for mixture delivered by primary carburetor.

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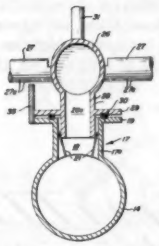
**3,837,629**

## GAS DIFFUSING MECHANISM

**Edward J. Matras, Palatine, and Fred W. Broling, Barrington, both of Ill., assignors to FMC Corporation, Chicago, Ill.**

**Filed July 2, 1973, Ser. No. 375,676**
**Int. Cl. B01f *3/04***
**U.S. Cl. 261—122** **9 Claims**



The apparatus provides for releasably coupling diffusion headers to a main gas distribution line which is fixedly positioned in an aeration tank. The main distribution line includes a plurality of access passages adapted to receive gas communication channels extending from each diffusion header. The access passages are provided with positive closure means which prevent the escape of gas from the distribution line when a diffusion header is removed from the tank for service. The closure means are opened when a header is lowered by a swing-type linkage and the header channel is inserted into the access passage.

**3,837,630**

## METHOD OF LINING METALLURGICAL FURNACES AND A LINING MATERIAL

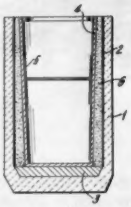
**Helmut Kohl; Siegfried Forhauser; Detmar Mantell, all of Gelsenkirchen; Karl-Ernst Granitzki, Virsen; Heinrich Hess, Troisdorf, and Paul Schiefer, Hennef-Uckerath, all of Germany, assignors to Rheinstahl AG, Essen; Vertriebsgesellschaft fur Feurfeste and Giesstechnische Erzeugnisse mbH, both of Viersen, all of, Germany**

**Filed Feb. 28, 1973, Ser. No. 336,556**

**Claims priority, application Germany, Mar. 20, 1972, 2213392**

**Int. Cl. F27d** *1/16*

**U.S. Cl. 266—43** **9 Claims**



A method of lining a metallurgical furnace particularly induction furnaces using a form which is placed at a spaced location from the furnace wall comprises filling the hollow space between the furnace wall and the form with a granular and dry refractory material, compacting the material, subjecting the compacted material to a ceramic sintering process by heating it to an intermediate termperature in the range of from about 300° to 800° C. until the material attains a sufficient stability of shape, thereafter removing the form and subjecting the refractory material to a further ceramic sintering process by further heating. A self supporting lining for the metallurgical furnaces comprises a highly compacted and dry structure of a refractory oxide or an oxide mixture to which a dry sintering agent is added and which has been consolidated at a temperature of from between 300° to 800° C.

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**3,837,631**

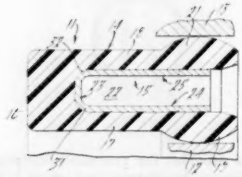
## SPRING FOR COMPOSITE SEALING RING AND METHOD OF MANUFACTURE

**Bryce B. Evans, Jackson, Mich., and Edwin C. Elsner, Kanosh, Utah, assignors to Aeroquip Corporation, Jackson, Mich.**

**Filed May 8, 1972, Ser. No. 251,366**

**Int. Cl. F16f** *9/36*

**U.S. Cl. 267—1.5** **8 Claims**



A spring for a composite sealing ring of the type having a channel-shaped jacket. The spring comprises an annular member of U-shaped cross section, the web of the U engaging the web of the jacket, the flanges of the U pressing against the flanges of the jacket and having a plurality of circumferentially spaced slots. In one form, useful primarily for radial seals, the spring comprises a sinuous member bent to form the web and flanges. In another form, useful for face seals, the web is circumferentially continuous and the flanges are formed by spaced legs. The spring is fabricated by first forming it in flat shape and then bending the flanges out of the plane of the web. The flat blank may be made by a photoetch process or, in the case of the sinuous embodiment, bending a wire into sinuous shape, flattening the wire and then bending the flanges away from the web.

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**3,837,632**

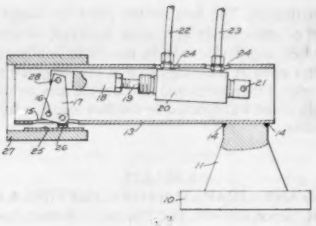
## VISE FOR TUBULAR ARTICLES

**Howard F. Nelson, South Attleboro, Mass., assignor to George Lemieux, Pawtucket, R.I., a part interest**

**Filed Feb. 8, 1973, Ser. No. 330,729**

**Int. Cl. B23b** *31/40*

**U.S. Cl. 269—48.1** **4 Claims**



A vise for tubular articles which grips the tubular article from the inside to present an unobstructed outer surface for working. The vise comprises a base on which a hollow, tubular mandrel is horizontally mounted. A flat cam member is mounted within the mandrel adjacent the front end and pivoted on a pin extending transversely through the mandrel. A second pivot pin is mounted transversely further along the mandrel, and the rear end of an air cylinder is pivotally mounted on the second pin. The outer end of the piston, extending from the air cylinder, is pivotally attached to the top of the flat cam. The cam is pivoted just above a slot in the mandrel, so that movement of the cam will cause it to swing into and out of the mandrel through the slot. Reciprocation of the piston controls the pivotal movement of the cam. A short post is pivoted to the bottom edge of the cam spaced from the cam pivot. An arcuate shoe is mounted on the bottom of the post, so that when the cam is in withdrawn position the shoe is nested against the lower outer surface of the mandrel. When a piece of tubular work is slipped over the mandrel, actuation of the cylinder and its piston causes the cam to pivot downwardly and force the shoe against the inner surface of the tubular work to hold it in position. Movement of the piston in the opposite direction will release the work.

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**3,837,633**

## CENTRIFUGE TEST TUBE HOLDER

**Charles Paulsen, Newtown, Conn., assignor to Ivan Sorvall, Inc., Norwalk, Conn.**

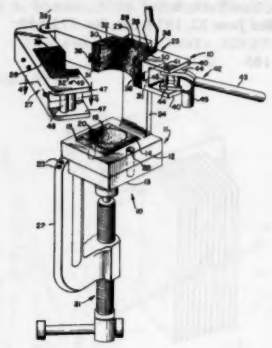
**Filed Mar. 7, 1973, Ser. No. 338,858**

**Int. Cl. B25b** *5/04, 5/14, 5/16*

**U.S. Cl. 269—128** **6 Claims**

This specification discloses a centrifuge test tube holder that accepts tubes of various radial dimensions, clampingly engages the upper end of a tube with a yieldable force that is susceptible of adjustment to provide a predetermined clamping effect which is overcome when excessive rotative force is applied to a cap that is screwed onto the neck of the tube, and in which the tube is adjustable vertically to insure that the mouth of the tube and the cap are at the same level. The

holder is adapted to be secured directly to a table by screws, through the medium of a C-clamp, or through a vacuum base.



The holder includes a pair of complemental jaws which grip the tube and which may be quickly connected in clamping position or rapidly disengaged.

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**3,837,634**

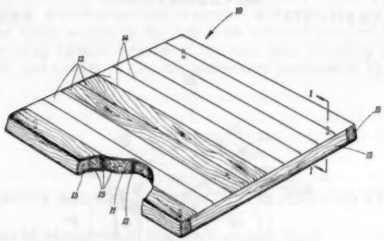
**CUTTING BOARD**

**Westray Stewart Cobb, 1820 Casselberry Rd., Louisville, Ky. 40205**

**Filed Feb. 28, 1973, Ser. No. 336,431**

**Int. Cl. B23q** *3/00*

**U.S. Cl. 269—289** **6 Claims**



A cutting board comprised of a particle board center having a plurality of veneer strips adhesively secured to the top and bottom surfaces thereof and lumber edge members adhesively secured to its edges, the securing adhesive coating the entire surface of said particle board to prevent water from penetrating into said board, the overall result being an inexpensive, dimensionally stable cutting board having the appearance of being made from solid pieces of lumber.

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**3,837,635**

**MEDICAL EXAMINING CHAIR**

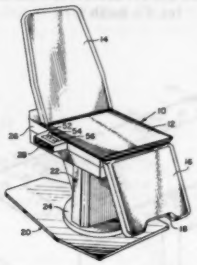
**Larry K. Long, Tempe; Thomas C. Knight, Scottsdale; William F. Jackson, and John W. Winter, both of Phoeniz, all of Ariz., assignors to Amerco, Inc., Phoenix, Ariz.**

**Filed Apr. 10, 1973, Ser. No. 349,892**

**Int. Cl. A61g** *15/00*

**U.S. Cl. 269—325** **4 Claims**

Medical examining chairs, particularly a medical examining chair which is articulated from a flat horizontal position to a vertical chair support type position. The chair includes a horizontal mid-portion, together with a head portion and a foot portion hinged at opposite ends of said mid-portion. Both the head portion and foot portion are interconnected by supporting linkage. The chair is mounted upon a rotatable base and includes power driven actuating means to raise the chair



vertically, as well as to pivot the head and foot portions from the horizontal plane of the mid-portion to vertical planes intersecting the mid-portion.

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**3,837,636**

**METHOD AND APPARATUS FOR INSERTING PAPER BETWEEN PLATE-SHAPE MATERIAL**

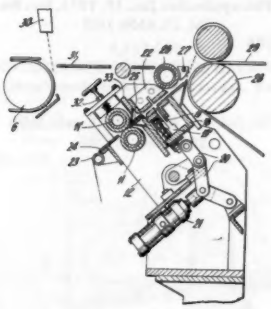
**Nobumitsu Hegi; Takeshi Kitamura, both of Kitakyushu; Seishiro Saida, and Tadao Kawaguchi, both of Hikari, all of Japan, assignors to Nippon-Steel Corporation, Tokyo, Japan**

**Filed Sept. 6, 1972, Ser. No. 286,816**

**Claims priority, application Japan, Oct. 29, 1971, 46-8003; Dec. 6, 1971, 46-114566**

**Int. Cl. B65h** *39/02*

**U.S. Cl. 270—45** **4 Claims**



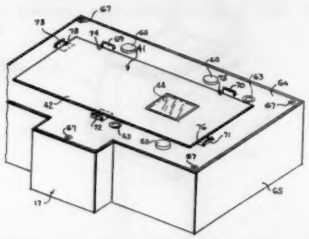
A method of inserting film shape protective material as paper, and the like between plate-shape material and such as steel sheets, aluminum sheets, glass plates, and the like, which are piled in a stack, being piled up by placing the protective material on the top or bottom of the plate-shape material, and characterized in that the forward end of the protective material is positioned transversely of the path of the plate-shape material on it is moved into the stacking position and is folded back in such manner as wrapping the forward end of the plate-shape material so that the protective material is surely attached to the plate-shape material.

**3,837,637**

## ALIGNMENT STATION FOR APERTURE CARD PHOTOGRAPHIC COPYING MACHINE

**Dale S. Endter, and Edwin E. Miller, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.**

**Filed Oct. 31, 1972, Ser. No. 302,432**
**Int. Cl. B65h** *9/10*
**U.S. Cl. 271—11** **5 Claims**



A photographic copying machine has a card holder which picks up a topmost aperture card from a stack of these cards and carries the picked-up card to successively arranged operating stations. At several of the stations, a photosensitive film insert on the picked-up card is exposed and processed. At a preceding one of the stations, the picked-up card is temporarily released by the card holder and positioned in a given relation to such holder before again being picked-up. This is done to insure accurate registration of the film insert with the exposing and processing stations, when the card holder with the picked-up card arrives respectively at such stations.

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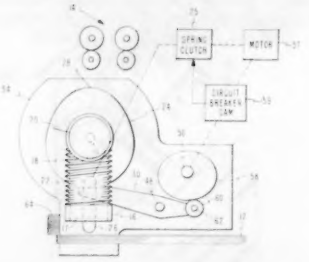
**3,837,638**

## SHEET PICK-UP AND FEEDING DEVICE

**Theodore H. Anderson, Pine Island; George J. O'Konski, and Michael N. Zell, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Continuation-in-part of Ser. No. 155,969, June 23, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,683**
**Int. Cl. B65h** *3/08*
**U.S. Cl. 271—95** **6 Claims**



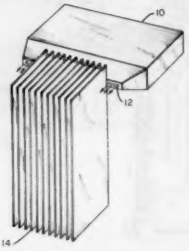

A vacuum picking and feeding mechanism wherein the motion of the picker-foot is interrupted before actual contact with the upper most document of the stack by sensing the proximity of the foot to the upper most sheet in the stack and actuating a stopping means to stop the movement of the foot toward the stack at a position where the negative air pressure is strong enough to attract the upper most sheet. By doing this, air between the upper most sheets will not be forced out. A conventional fluffer is automatically valved by the picker foot.

**3,837,639**

## FREE JET RECORD SEPARATOR

**Edwin R. Phillips, Rosemont, Pa., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed June 22, 1973, Ser. No. 372,545**
**Int. Cl. B65h**
**U.S. Cl. 271—105** **7 Claims**



The invention discloses a fluffing arrangement to provide separation between the records contained in a cartridge in order to facilitate random removal of an individual record. A free jet of low pressure directly impinges on the deck to maintain separation between the records.

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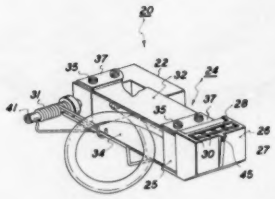
**3,837,640**

## STRIPPER FINGER WITH AIR CUSHION

**James R. Norton, Rochester, N.Y., and Herbert F. Schmalzbauer, Chester, Conn., assignors to Xerox Corporation, Stamford, Conn.**

**Filed Nov. 13, 1972, Ser. No. 306,238**
**Int. Cl. B65h** *29/56*
**U.S. Cl. 271—174** **5 Claims**



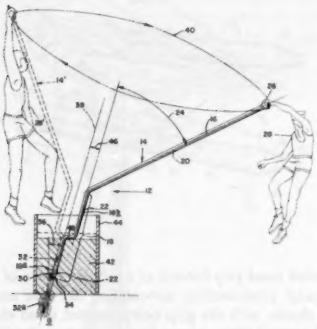
A stripping apparatus for stripping copy sheets from the surface of the xerographic drum without destroying the developed latent electrostatic image on the copy sheet and without contacting the drum surface. A stripping finger is mounted on a linkage which is supported from the machine frame to position the finger in close proximity with the drum surface. The finger has a tip portion which protrudes slightly past the point of tangency of the finger with the drum surface. Small apertures are formed at the bottom of the finger which is hollow and is in communication with an air supply to cause an air cushion to be formed under the finger. The finger floats on an air cushion which is maintained at a predetermined distance from the drum surface. By virtue of the position of the tip with the drum surface, stripping of the leading edge of copy sheets to be stripped from the drum surface is accomplished without contacting the drum surface. A tiny channel formed in the forward surface of the tip is in communication with the air supply and provides sufficient pressure to blow developer material away from the tip to maintain it in clean condition. The linkage is arranged to exert a pressure biasing action on the finger in the direction normal to the direction of drum movement.

3,837,641

## ROTATABLE SWING BAR

Clarence A. Hanson, 305 Illinois St., Hobart, Ind. 46342, and Richard A. Hanson, 5750 Tamarack Way, Concord, Calif. 9452

Filed Feb. 2, 1973, Ser. No. 328,895
Int. Cl. A63g 1/20
U.S. Cl. 272—33 R 6 Claims



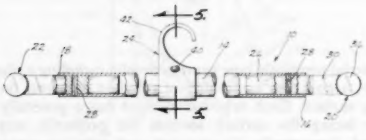
An exercise and amusement device to swing a user in a circular path about a preselected tilted upright axis wherein the device consists essentially of a bar formed to define two sections, one at an angle to the other, rotatably mounted on the ground or other base. A container, or ground cavity, surrounds the lower section of the device to carry therein a dry, non-fluid, granular material in contact with at least a portion of the lower section of the bar. Such material provides frictional drag against rotation of the bar, thus providing constraint and variety to circular movement experienced by the user.

3,837,642

## TOGGLE BAR FOR BRACHIATION IN PLACE BY THE UPPER LIMBS

Robert M. Martin, 90 N. Hudson, Pasadena, Calif.

Continuation of Ser. No. 177,797, Sept. 3, 1971, abandoned. This application July 5, 1973, Ser. No. 376,617
Int. Cl. A63b 1/02
U.S. Cl. 272—62 1 Claim



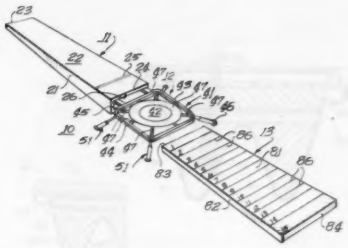
A toggle bar for brachiation in place by the upper limbs is disclosed herein and comprises an elongated tubular bar having T-shaped handles at the opposite ends thereof. A support is secured to the bar intermediate the ends thereof and has a hook shaped portion extending upwardly therefrom which is adapted to be detachably mounted on a suspended support whereby the bar is pivotally movable with respect thereto.

3,837,643

## JUMPOLENE GAME

Jay H. Lee, 112 S. Bolmar St., West Chester, Pa. 19380

Filed May 7, 1973, Ser. No. 358,151
Int. Cl. A63b 5/18
U.S. Cl. 272—65 8 Claims



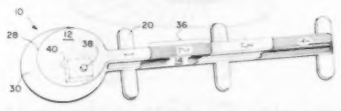
A jumpolene recreational apparatus type game consisting of a trampolene having a generally rectangular frame and a trampolene bed within the frame and connected to the sides and ends of the frame by a plurality of spaced resilient connectors each under tension to yieldingly hold the bed in a tightly stretched position relative to the frame, the frame having adjustable legs spaced thereabout to support the frame above the ground with the legs being adjustable to control both the height of the frame above the ground and the inclination of the frame relative to the ground, a sloped runway leading up to the front end of the frame with the elevated portion of the runway nearest the front end of the frame, and a longitudinally extending jumping mat disposed on the opposite end of the frame with one end thereof adjacent the rear end of the frame with the mat projecting longitudinally outwardly therefrom and marked off by transversely extending lines to indicate relative distances from the rear end of the trampolene frame.

3,837,644

## TIME AND DISTANCE INDICATING BALANCING TOY

William C. Stinchcomb, 634 Charraway Rd., Baltimore, Md. 21229

Filed Mar. 28, 1973, Ser. No. 345,683
Int. Cl. A63b 1/02
U.S. Cl. 273—1 R 9 Claims



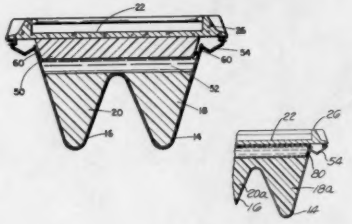
A walk-on type horizontal rail with cross-ties and a platform at one end of the rail having a footswitch-controlled timing mechanism for giving audible and visual signals to contestants, who start at the platform and attempt to progress as far as possible along the rail im minimum time; the platform has stabilizing pads and all the bottom surfaces have non-skid provisions; special paint patterns both aid and hinder contestants in various embodiments; novel folding arrangements and safely rounded corners are also disclosed.

3,837,645

## PLAYING TABLE WITH BASE FOR HOLDING FLUID THEREIN

Richard R. Criswell, 33182 Palo Alto, Dana Point, Calif. 92629

Continuation-in-part of Ser. No. 42,318, June 1, 1970, abandoned. This application Apr. 21, 1972, Ser. No. 246,282
Int. Cl. A63d 15/00
U.S. Cl. 273—3 C 8 Claims



There is disclosed herein a playing table for games, such as billiards or the like, generally employing a playing board and a base wherein fluid in the base is utilized for distributing the supporting force to the board in a uniform manner and providing substantially all of the supporting force therefor. A float device may underlie substantially the entire board and float upon a liquid within the base, or the support and uniform distribution of the board may be provided by a bladder type device. Additionally, the uniform support and force distribution arrangement permits use of board materials not otherwise generally considered usable for providing a flat playing surface, such as a slab of concrete. A nut arrangement attached to the board provides for clamping of the board to the base in a substantially fixed relationship for maintaining the plane of the board substantially fixed.

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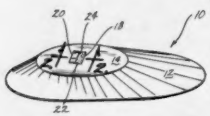
3,837,646

## PITCHING RUBBER

John J. Goeders, Altoona, Iowa, assignor to True Pitch, Inc., Altoona, Iowa

Filed Jan. 12, 1973, Ser. No. 323,240
Int. Cl. A63b 71/00
U.S. Cl. 273—25 8 Claims



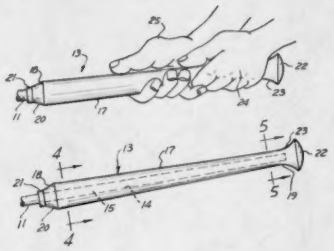
A pitching rubber for a portable pitching mound having a depression or toe hole formed in the upper surface thereof. The pitching rubber comprises a vertically adjustable rear rubber portion constructed of conventional slightly resilient material and a front rubber portion constructed of sponge or foam rubber material. The front rubber portion is positioned adjacent the forward vertical face of the back rubber portion to shield the same from a hit baseball. The two rubber portions fill the depression and have their upper surfaces normally coplanar with the upper surface of the mount. The front rubber portion is impervious to water to prevent the toe hole from filling with water.

3,837,647

## GOLF CLUB HAND GRIP

Edward J. Jacques, 45167 Kensington, Utica, Mich. 48087

Filed June 18, 1973, Ser. No. 370,669
Int. Cl. A63b 53/14
U.S. Cl. 273—81 R 3 Claims



A golf club hand grip formed of a tubular sleeve of substantially circular cross-section surrounding the free end of the golf club shank, with the grip being formed in an elongated, truncated conical shape whose larger base is at the sleeve end closest to the club head end of the shank and whose smaller base is adjacent the free end of the shank, so that the outer surface of the grip is gradually tapered along a straight line taper whose smaller diameter is adjacent the free end of the club, for the full length of the grip, with the grip smaller diameter end terminating in an integral, enlarged diameter knob-like portion.

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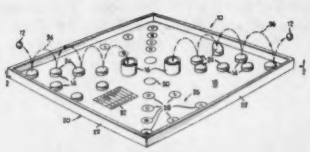
3,837,648

## AERIAL-PROJECTILE GAME HAVING MOVABLE REBOUNDING SURFACES

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 15, 1971, Ser. No. 189,700
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R 14 Claims



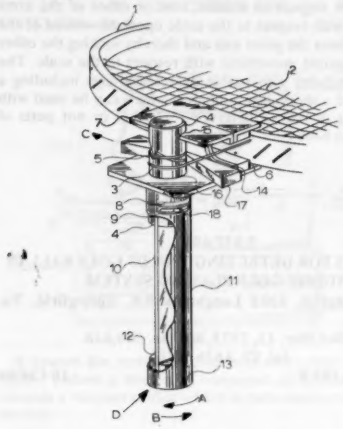
An aerial-projectile type game generally including a playing surface, a goal and a plurality of rebound elements on the playing surface. Each rebound element has a generally upwardly facing flat surface so that the projectile may be bounced downwardly thereagainst and rebound upwardly therefrom. The rebound elements are selectively positioned on the playing surface relative to one another so that the projectile may bounce thereagainst in a predetermined order thereby defining the path of travel for the projectile towards the goal. The playing surface also has a group of marked locations in predetermined relation to one another to locate the rebound elements over any of a combination of marked locations, each combination representing a path of travel of a different degree of difficulty.

3,837,649

## TENSION ADJUSTING DEVICE FOR SPORTS RACKET STRINGS

Paul James Burchett, 410 Acarid St., Corona Del Mar, Calif. 92625

Filed Oct. 11, 1972, Ser. No. 282,192
Int. Cl. A63b 49/00
U.S. Cl. 273—73 A 4 Claims



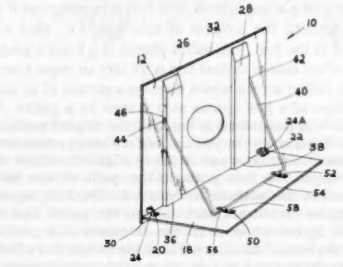
A pocket-sized device for stringing tennis rackets is held against the racket frame by a newly inserted racket string, wound around one end of the operating handle. A torsion spring connects the two ends of the handle. Relative deflection of the ends gives a visible indication of the amount of string tension caused by hand-twisting of the other end of the handle. A wedge is slid against the handle to maintain the string tension, while an awl is inserted into the frame hole. The operation is repeated for each string to be installed.

3,837,650

## COLLAPSIBLE TOSSING GAME TARGET

Harold I. Haney, 2623 S. Twelfth St., Ironton, Ohio 45638

Filed Oct. 19, 1972, Ser. No. 298,939
Int. Cl. A63b 72/00
U.S. Cl. 273—105 R 1 Claim



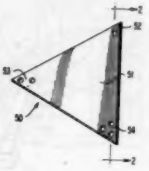
A bag tossing game target device having a pair of hingedly connected panels, one being obliquely inclined and having a bag receiving hole. A u-shaped brace is pivotally mounted to a pair of inner support beams mounted on opposite sides of said hole. The brace pivots into detachable engagement with a pair of catch members attached to the other panel. The target device can be easily collapsed to a flat storable position or opened into a rigid game target.

3,837,651

## GAME WITH REVERSIBLE PIECES

Marc Odier, 85 Boulevard Exelmans, Paris, France

Division of Ser. No. 47,969, June 22, 1970, Pat. No. 3,687,455.
This application July 10, 1972, Ser. No. 273,510
Int. Cl. A63f 9/20
U.S. Cl. 273—137 D 1 Claim



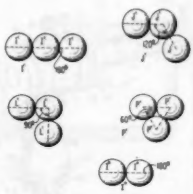
A game comprises a set of 20 polygonal pieces having a limited number of different indicia on the apices thereof, the possible combinations of the indicia being repeated once and only once, and forming sequences to be read in order. The pieces are reversible, so that the same indicium is reproduced in the corresponding position on the opposite side of the piece (the mirror image position). The indicia may be provided only on the opposite surfaces of the pieces, or may extend all the way through the pieces. Because of the mirror image placement of the indicia, twenty four different sequences of indicia are producible with the twenty pieces by inverting the four pieces which have a different indicium at each apex.

3,837,652

## SOLID PUZZLE

Akira Kuwagaki, and Sadao Takenaka, both of Kyoto, Japan, assignors to Nippon Cloth Industry Co. Ltd., Kyoto, Japan

Filed May 1, 1973, Ser. No. 356,227
Claims priority, application Japan, May 13, 1972, 47-46886
Int. Cl. A63f 9/12
U.S. Cl. 273—157 R 2 Claims

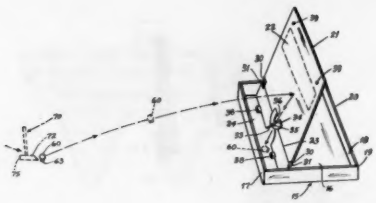


A solid puzzle of regular geometrical configuration consists of a number of layers of identical spheres, each of said layers including several kinds of connected units of spheres having connecting axes extending through the centers of the individual spheres, all of the connecting axes being on the same plane and any of two adjoining axes forming an included angle of 60°, 90°, 120° or 180°.

## 3,837,653
## INDOOR GOLF GAME

Robert B. Fox, 28 Medial Pl., Decatur, Mo. 62521, and Ernst F. Sturm, 8768 Del Vista Dr., Saint Louis, Mo. 63126

Filed Aug. 16, 1972, Ser. No. 281,052
Int. Cl. A63b 69/36
U.S. Cl. 273—178 R 6 Claims



A golf-type game comprises a carton with a top panel hingedly connected to the back wall, and an overlying target panel hinged to the forward edge of the top panel, so that upon raising the top panel, the target panel may be hinged down to dispose its lower edge in the carton, back from the front edge of the carton. The target panel may have a target hole in it, but is preferably solid to constitute a force-absorbing member that deadens the impact of a projectile striking it. The target panel may have a supplemental lower edge panel fitted with a putting hole, with a movable gating member to be moved over the hole to change its size. The projectile is a ball made of a shell of light plastic having built into it a tee portion also of light plastic. The projectile is struck by a club having a head with oppositely disposed chipping and putting faces, and head being connected by a universal joint to an extensible shaft. A supplemental target may be provided.

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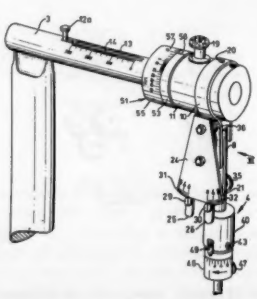
## 3,837,654
## GOLF PRACTICE DEVICE

Richmond E. Hall, 2 Langley Rd., Highcliffe-on-Sea, England

Filed Mar. 22, 1973, Ser. No. 343,961
Claims priority, application Great Britain, Apr. 10, 1972, 16425/72
Int. Cl. A63b 69/36, 57/00
U.S. Cl. 273—185 D 4 Claims



A golf practice device comprising a horizontal arm, a further arm mounted on one end of the arm for rotation about the arm, a ball on the outer end of the further arm, an indicator to indicate the number of revolutions of the further arm about the arm when the ball is hit by a golf club, a fade and draw indicator to indicate the extent of rotation of the ball with respect to the further arm and a deviation measuring mechanism for measuring deviations of the path of the ball from a plane perpendicular to the arm. The deviation measuring mechanism comprises a pivot mounting for the further arm, having a pivot of pivotally mounted interlocked arms displaceable with respect to a scale, one or other of the arms being moved with respect to the scale upon movement of the further arm about the pivot axis and thereby locking the other of the arms against movement with respect to the scale. The device also includes a pivotable detachable arm including a target end and a short-putt indicator, which can be used with the tethered golf ball to determine whether or not putts of desired lengths have been achieved.

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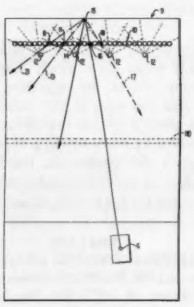
## 3,837,655
## APPARATUS FOR DETECTING SPIN OF GOLF BALL IN INDOOR GOLF PLAYING SYSTEM

Arthur C. Angelos, 8202 Langbrook Rd., Springfield, Va. 22152

Filed Mar. 13, 1973, Ser. No. 340,648
Int. Cl. A63b 69/36
U.S. Cl. 273—185 R 10 Claims

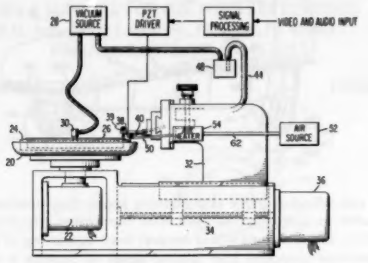


In an indoor golf playing system, it is very advantageous if a golfer can determine the amount of side spin, i.e., slice or hook imparted to the ball. The ball is placed at a known point which is part of the indoor system and is hit into an impact surface such as a wall or screen which displays a picture of an appropriate portion of a golf course as it is seen by a golfer. A row of detectors is positioned in front of the impact surface and, as the golf ball is hit toward the surface and crosses the row of detectors, it actuates one or more of the detectors to produce an output. In this manner, the path of the ball travelling towards the surface is detected. The ball, upon hitting the surface, rebounds back toward the golfer and is again detected by one or more of the detectors as it passes back through the row of detectors. The angle at which the ball rebounds from the surface is a function of the side spin imparted to the ball by the golfer. Therefore, by detecting the point at which the ball crosses the row of detectors as it travels toward the surface and comparing this point to the point at which the ball travels through the row of detectors as it rebounds from the surface, the amount of side spin can readily be determined. In the event the golf ball is to be hit from points of origin that may not be determined, a second row of detectors may be positioned between the first row of detectors and the points of origin.

### 3,837,656
### CHIP REMOVAL IN THE MASTERING OF FINE-GROOVED DISCS

Michel Pradervand, Chene-Bougeries, Geneva, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,606
Claims priority, application Great Britain, Apr. 19, 1972, 18153/72
Int. Cl. G11b *3/58*
U.S. Cl. 274—46 B 9 Claims




A system for removing chips cut away from a video disc master utilizes a stream of tempered air to direct the chips towards a vacuum orifice which in turn carries these chips off the disc.

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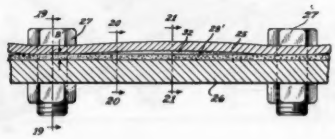
### 3,837,657
### BEADED GASKET AND METHOD OF USING SAME

Robert G. Farnam, New Lisbon, and Michael T. Passarella, Wis. Rapids, both of Wis., assignors to F. D. Farnam Co., New Lisbon, Wis.

Continuation-in-part of Ser. Nos. 211,003, Dec. 22, 1971, and Ser. No. , , which is a continuation-in-part of Ser. No. 76,459, Sept. 29, 1970, Pat. No. 3,655,210, and Ser. No. , , which is a continuation-in-part of Ser. No. 66,958, Aug. 26, 1970, abandoned. This application Aug. 7, 1972, Ser. No. 278,259
Int. Cl. F16j *15/06*
U.S. Cl. 277—1 19 Claims

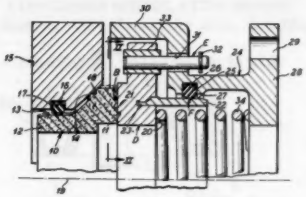


A gasket structure and the method of making the gasket structure, as well as the method of utilizing the gasket for effectively sealing incongruous mating surfaces, which is characterized by providing the gasket with an upstanding bead on one or both sides, the density of which is always less than that of the unbeaded portion to provide maximum compressibility with maximum sealing conformability. The gasket is further characterized by having the unbeaded portion having a density that is, or can be, tailored to provide a prepressed body portion that is more stable to uneven clamping pressures, thus minimizing distortion while having increased torque retention. Where greater heat insulating qualities may be required the gasket structure may be made from asbestos fiber millboard having a minimum amount of binder and with either type of gasket where additional sealing properties are desired the gasket structure may be provided with a coating layer that is cured to effect maximum sealing and protect the gasket from deleterious effects of the environment in which it is used.

### 3,837,658
### ROTARY STEAM SEAL FOR DRYER DRUM

Eugene S. Skinner, Roscoe; Elmer E. Crist, and Louis D. Phelps, both of Beloit, all of Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Jan. 5, 1973, Ser. No. 321,328
Int. Cl. F16j *15/38*
U.S. Cl. 277—26 11 Claims



A rotary union including first and second relatively rotating units, the second unit being stationary and the first unit including a carbonaceous sealing ring having a radial sealing face and a rearwardly facing beveled centering face, a rotatable holding member having a beveled holding face in engagement with said centering face and a secondary O-ring seal behind the centering face, the stationary unit including a second sealing ring urged against the first sealing ring by a coiled compression spring and supported in a holding member with axial sliding pins preventing rotation of the second sealing member relative to the holdering member and an O-ring between the holding member and second sealing ring accommodating axial movement thereof.

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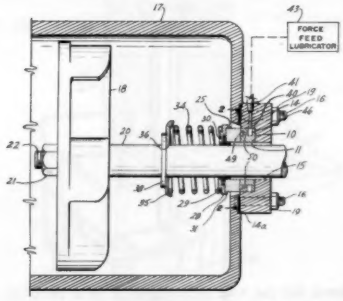
### 3,837,659
### SEALS FOR ROTARY SHAFTS

E. Ray Moncrief, 1132 Plum, La Marque, Tex. 77568

Filed Dec. 4, 1972, Ser. No. 311,858
Int. Cl. F16n *17/04*, *15/00*; F16j *15/34*
U.S. Cl. 277—74 2 Claims

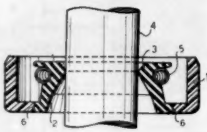



Seals for rotary shafts wherein a surface-to-surface lapped seal is lubricated by injection of lubricant to between the lapped surfaces. Where formation of ice at the seal is likely to occur, the lubricant may be an oily material capable of preventing formation of ice crystals between the lapped sealing surfaces and of removing previously formed ice crystals from between the lapped sealing surfaces, rendering the invention particularly useful in connection with handling of materials such as ethylene and propylene in which ice formation occurs when moisture is present.

## 3,837,660
## COMPOSITE SEAL RING

Mario Poggio, c/o Mongul, Supertex s.p.a., Via Torino N 220/222, 10040 Leini, Turin, Italy

Filed Apr. 24, 1972, Ser. No. 247,081
Claims priority, application Italy, Jan. 12, 1972, 67085/72
Int. Cl. F16j 15/00
U.S. Cl. 277—227 1 Claim



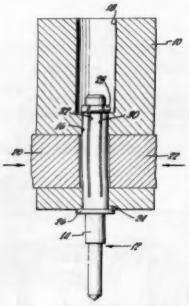
Seal rings for rotating shafts are manufactured by locating or causing to be supplied in a mould having the shape of the complete ring two materials having a chemical affinity and suitable the one to embody the outer rigid part and the other to embody the inner flexible part of the ring, and by effecting the polymerization of said materials.

The seal ring thus obtained consists of a single piece of synthetic material, rigid in its outer part and flexible in the in ternal part corresponding to the seal lip.

## 3,837,661
## CHUCK SLEEVE

Edward F. Phillippi, Palos Verdes Peninsula, Calif., assignor to Excellon Industries, Torrance, Calif.

Filed June 21, 1972, Ser. No. 264,897
Int. Cl. B23b 31/14
U.S. Cl. 279—1 C 12 Claims

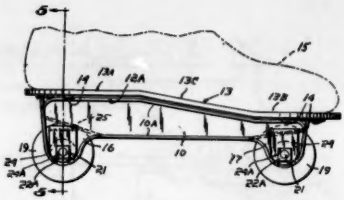


A sleeve for the tool receiving bore of a chuck is formed with a number of longitudinal slits, a stop collar at one end and a peripheral retaining bead at the other end. The sleeve is interposed between the conventional gripping members of the chuck collet and the inserted tool shank. Forces exerted by the gripping members are transmitted to the tool shank through the sleeve. When used in a chuck having several centrifugally urged holding members the sleeve keeps the holding members from flying out of the chuck body when the chuck is rotated without a tool inserted therein and maintains apertures of the holding member in alignment to facilitate insertion of a tool. The sleeve is made in different wall thicknesses to enable use of tool shanks of different diameters in the same chuck collet.

## 3,837,662
## TWO WHEELED ROLLER SKATE

Robert G. Marks, Walpole, Mass., and Robert E. Beaupre, 67 Jackson St., Lynn, Mass. 01902, assignors to said Beaupre, by said Marks

Filed Dec. 13, 1972, Ser. No. 314,747
Int. Cl. A63c 17/06
U.S. Cl. 280—11.23 4 Claims

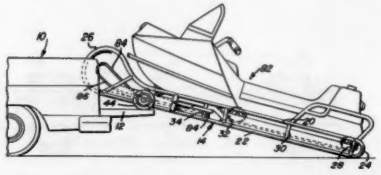


A two wheeled roller skate having supporting structure attachable to a shoe is disclosed. The supporting structure has forward and rearward wheel holders each consisting of a pair of portions disposed and spaced apart to receive a wheel between them, each such portion having a downwardly opening slot. Each wheel has a tread surface that is arcuate transversely considered and is supported by bearings that have surfaces arranged to take the load as the skate is tilted from side-to-side in use and include independently rotatable parts having projections slidably seated in the downwardly opening slots. Releasable keepers underlie the projections to block their escape from the slots in which they are seated but are movable to permit the wheels to be removed and replaced.

## 3,837,663
## SNOWMOBILE LOADING RAMP

Clemet M. Ness, Rt. 5, Bemidji, Minn. 56601

Filed May 1, 1970, Ser. No. 33,589
Int. Cl. B62b 13/18
U.S. Cl. 280—8 8 Claims



An elongated ramp structure for use in loading a snowmobile on to an elevated vehicle load bed. The ramp is designed to be disposed in an inclined position with its lower end upon the ground and its upper end resting upon the rear of the associated load bed. The ramp includes opposite side support wheels at its upper or forward end and automatic chock structure disposed forward of the longitudinal center of the ramp and shiftable between a lowered position depressed below the upper surface of the ramp and an upper position projecting above the upper surface of the ramp. The chock structure is spring-biased to its upper position and includes a forwardly facing upstanding abutment surface disposed above the upper surface of the ramp when the chock structure is in its upper position. The chock structure is engageable by the front skis of a snowmobile being driven up the ramp and is depressed by the front skis of the snowmobile as the latter move over the chock structure. As the rear ends of the skis of the snowmobile pass forwardly of the chock structure, the latter is

released for upward displacement to its upper position whereby rearward displacement of the snowmobile along the ramp is prevented by the forwardly facing abutment surface of the chock surface. After a snowmobile has been loaded upon the ramp, the rear end of the ramp is lifted above the ground with the ramp generally horizontally disposed and the front end thereof supported on the load bed by its supporting wheel structure for forward rolling movement into position fully overlying the associated load bed.

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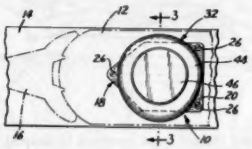
**3,837,664**

**SOLE SUPPORT FOR USE WITH SKI BINDINGS**

**Gerald H. Asp, 135 S. Lasalle St., Hinsdale, Ill. 60603**

**Filed Nov. 5, 1973, Ser. No. 412,952**
**Int. Cl. A63c 9/08**
**U.S. Cl. 280—11.35 C** **13 Claims**



A safety device is disclosed for supporting the sole of a skier's boot on a ski generally adjacent a ski binding which is adapted to release the ski boot when the ski boot is subjected to a predetermined force, the safety device facilitating low friction movement and release of the ski boot relative to the ski when subjected to the predetermined force.

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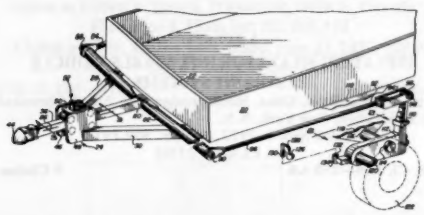
**3,837,665**

**ELEVATABLE TRAILER MECHANISM**

**Arthur G. Schramm, 3113 N. Highland Ave., Phoenix, Ariz. 85016**

**Filed Oct. 1, 1973, Ser. No. 402,173**
**Int. Cl. B62d 21/14**
**U.S. Cl. 280—43.18** **9 Claims**



An elevatable trailer having a tongue adapted to be coupled to a towing vehicle. A frame provided with a tongue guide in which said tongue is movable forwardly and backwardly; and linkage and lever means comprising bell crank arms pivoted on the frame of the trailer and carrying wheels such that the linkage means pivots the bell crank arms and thereby elevates the frame when the tongue is pulled forward and latch means for latching the tongue in forward position relative to the frame for maintaining the frame in elevated position relative to the ground and on the wheels carried by the bell crank arms.

The disclosure also relating to novel frame guide and latch means for guiding the tongue relative to the frame and for latching the tongue in forward position.

The disclosure also relating to the novel scissor linkage mechanism interconnecting a pair of bell crank arms by means of suspension springs and tension rods to provide efficient tandem axle lifting of an elevatable trailer frame.

The disclosure also relating to means for locking wheels of the trailer in relation to the bell crank arms so that the wheels are frictionally held on the ground while the tongue of the trailer is pulled forward and the bell crank arms are thereby pivoted relative to the frame for elevating it upwardly from the ground level.

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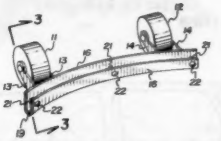
**3,837,666**

**CONTAINER WHEEL ATTACHMENT**

**Beryl D. Hodson, 4801 Greenbrier Ave., San Diego, Calif. 92120**

**Filed Feb. 16, 1973, Ser. No. 333,165**
**Int. Cl. B62b 1/12**
**U.S. Cl. 280—47.13 R** **1 Claim**



A container wheel attachment for attaching wheels to a container such as a standard metal trash can having a downwardly extending lip at the bottom portion thereof in which an arcuate U-shape bracket having an opening at the top portion thereof with a radius of curvature corresponding to the radius of curvature of the downward extending lip of a container for receiving the said lip and having a pair of wheels attached to one surface of the bracket, the bracket being attached to the lip by a plurality of attachment screws resulting in a wheel attachment with the bottom surface of the wheels substantially coplanar with the bottom surface of the downwardly extending lip of the container.

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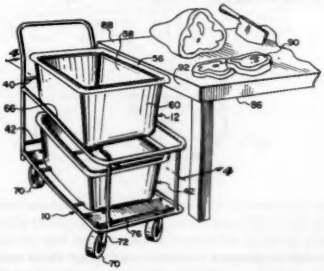
**3,837,667**

**LUGS AND CART THEREFOR**

**Morton A. Sernovitz, 8642 Keystone Ave., Skokie, Ill. 60076**

**Filed June 21, 1973, Ser. No. 372,323**
**Int. Cl. B62b 3/00**
**U.S. Cl. 280—47.34** **10 Claims**



The combination of an open-framed cart and a plurality of containers or lugs, as they are called in this art, is disclosed which fit together in a number of convenient carrying arrangements. The containers have transverse spaced grooves in their bottom surfaces which fit upon and coincide with pairs of longitudinal and transverse frame members of the cart to hold the containers thereon during produce handling procedures. The

cart has two tiers in the frame such that each tier can hold one container longitudinally or two containers transversely. The containers also nest in stacked relationship within each other and the longitudinal distance between the bottom grooves of the containers is the same as the transverse distance between their top longitudinal rolled flange edges so that one container will rest on the other in a stable relationship.

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**3,837,668**

**PROTECTION DEVICE FOR VEHICLE PASSENGERS**

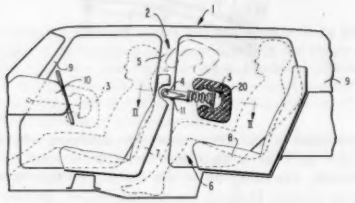
**Bela Barenyi, Maichingen, and Hermann Renner, Boblingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany**

**Filed Nov. 5, 1971, Ser. No. 196,062**

**Claims priority, application Germany, Nov. 7, 1970, 2054916**

**Int. Cl. B60r *21/02***

**U.S. Cl. 280—150 B** **54 Claims**



A protection installation for the passengers of vehicles, especially of passenger motor vehicles, in which an impact device adjustable from a rest position into a use position is provided within the area of the persons seated alongside the driver and/or the rest passengers.

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**3,837,669**

**PROTECTOR BAG STORAGE DEVICE OF MOTOR VEHICLE SAFETY DEVICE**

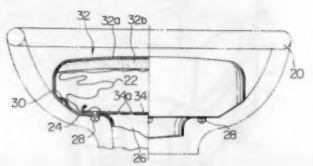
**Yasuo Nagazumi, Tokyo; Tokuichiro Hosaka, Yokohama, and Kohei Maeda, Tokyo, all of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan**

**Filed Feb. 10, 1972, Ser. No. 225,080**

**Claims priority, application Japan, Feb. 15, 1971, 46-6607**

**Int. Cl. B60r *21/08***

**U.S. Cl. 280—150 AB** **5 Claims**



In order to protect a vehicle occupant from being hurt by collision with a considerably hard container of a protector bag which is held in a folded position in a motor vehicle apparatus in which the protector bag is expanded between the vehicle occupant and a structural part of the vehicle cabin, the protector bag is usually stowed in a storage device including cushioning means which cover the folded protector bag when the safety apparatus is held in an inoperative condition and which is readily released from the protector bag when the protector bag is expanded with pressurized fluid blown thereinto in the event the motor vehicle encounters a collision.

**3,837,670**

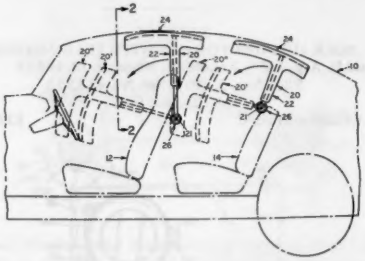
**VEHICLE OCCUPANT RESTRAINING DEVICE**

**Gail D. Hilyard, Toledo, Ohio, assignor to Hugh A. Kirk and Robert E. Hilyard**

**Filed June 19, 1972, Ser. No. 263,864**

**Int. Cl. B60r *21/08***

**U.S. Cl. 280—150 B** **9 Claims**



The Hilyard Halter is an inverted U-shaped pendulum type of device which is pivoted at the outer ends of the U behind the back and below the head of an occupant in a vehicle and has a cushioned pad or net across the base of the U which is normally stored above the head of the occupant in the roof of the vehicle, and which in an emergency stop situation automatically quickly moves down in front of the occupant, by its own inertia and with aid, as well as extends to decelerate, surround and hold the occupant. The hubs for the pivoted frame are provided with adjustable spiral springs to increase the speed of action of the device, and the frame may be held from operation by adjustable spring applied balls in sockets around the hubs and/or solenoid operated catches that release when a given deceleration of the vehicle occurs. These hubs are also provided with stops for limiting the angular movement of the device. The legs of the U may be telescopic and provided with hydraulic pistons and/or compression springs for aiding in the deceleration of the occupant together with the resiliency of the cushion pad or net across the base of the U.

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**3,837,671**

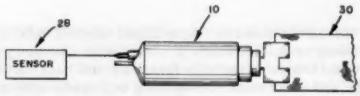
**INFLATING MEANS FOR INFLATABLE VEHICLE RESTRAINT SYSTEMS**

**Brian K. Hamilton, Utica, Mich., assignor to Allied Chemical Corporation, New York, N.Y.**

**Filed Nov. 6, 1972, Ser. No. 304,291**

**Int. Cl. B60r *21/08***

**U.S. Cl. 280—150 AB** **9 Claims**




A compact inflating means which does not require a device to generate large quantities of gas or movable mechanical parts is provided for use with inflatable restraint systems for vehicles, particularly inflatable restraint systems of the inflatable band type. The inflating means comprises a source of pressurized gas and means to release the pressurized gas in response to an increase of the gas pressure as a result of the pressurized gas being heated. More particularly, the inflating means comprises containing means, pressurized gas stored within the containing means, sealing means normally preventing discharge of the pressurized gas from the containing means and capable of releasing the pressurized gas from the contain-

ing means in response to the pressure of the pressurized gas reaching a predetermined level, and heating means actuatable to heat the pressurized gas and thereby increase its pressure to at least the predetermined level, whereby the sealing means releases the pressurized gas.

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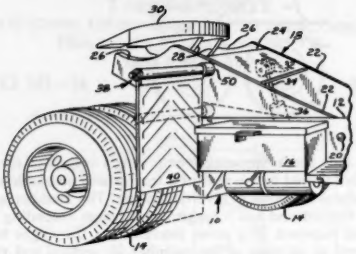
**3,837,672**
**TRACTOR AND MUD FLAP THEREFOR**

**Lloyd A. Molby, Longview, Tex., assignor to Capacity, Inc., Downers Grove, Ill.**

**Filed Oct. 19, 1972, Ser. No. 299,108**
**Int. Cl. B62d** *25/16*
**U.S. Cl. 280—154.5 R** **6 Claims**



An improved mud flap system for prime movers such as tractors employed in towing trailers. The mud flap is mounted for up and down movement on the prime mover frame and in a location forwardly of the drive wheels thereof so that the same can be selectively elevated when a trailer is not being towed by the prime mover to intercept mud thrown forwardly of the drive wheels off of the upper surface thereof.

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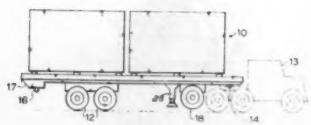
**3,837,673**
**TRAILER BACKABLE TO LOADING DOCK FROM EITHER END**

**Robert Joseph McCarthy, Sutton W., Ontario, Canada, assignor to Robert A. Brown, Willowdale, Ontario, Canada**

**Filed June 4, 1973, Ser. No. 366,375**
**Claims priority, application Canada, June 23, 1972, 145502**
**Int. Cl. B62d** *53/06*
**U.S. Cl. 280—415 B** **3 Claims**



An auxiliary fifth wheel connection for a trailer with auxiliary wheels allows backing of the trailer in either direction.

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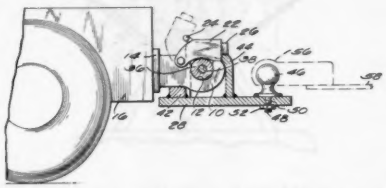
**3,837,674**
**TRAILER HITCH CONVERTER**

**Quintin J. Rathsack, Rt. 6, Box 153, Appleton, Wis. 54911**

**Filed Aug. 3, 1973, Ser. No. 385,624**
**Int. Cl. B60d** *1/06*
**U.S. Cl. 280—417** **3 Claims**

A pintle hook trailer hitch which includes a hook and a closure member is attached to the rear of a towing vehicle. The closure member is movably mounted over the eye of the hook for opening and closing the same. A converter for other hitch systems is attachable to the hook and comprises an elongated base plate, two side plates which are attached to opposite side edges of the base plate and a shaft which is attached between the two side plates, the shaft being dimensioned to fit in the eye of the hook, and the side plates being positioned to bear against opposite sides of the hook to prevent sidewise rotation of the base plate with respect to the hook. An abutment on the front end of the base plate bears against the bottom of the



hook to prevent downward rotation of the base plate with respect to the hook. A rear plate is attached between the two rear edges of the side plates and constitutes an abutment bearing on the closure member to prevent upward rotation of the base plate with respect to the hook. The ball portion of a ball hitch is removably attached to the rear of the base plate through an opening in the base plate which is dimensioned to receive the pin of a pin and clevis hitch when the ball is removed from the base plate.

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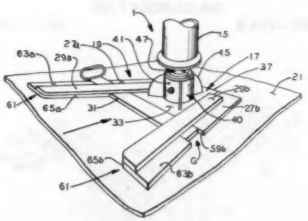
**3,837,675**
**TRAILER HITCH FOR COUPLING WITH PICK-UP TRUCK**

**Roger L. Barnes, Hillsboro, and David H. Hill, Fillmore, both of Ill., assignors to Tri-Star Corporation, Fillmore, Ill.**

**Filed Feb. 14, 1973, Ser. No. 332,427**
**Int. Cl. B62d** *53/08*
**U.S. Cl. 280—423 R** **9 Claims**



A hitch for coupling a goose-neck trailer to a towing vehicle (e.g., a pick-up truck) comprising a shoe carried by the goose-neck portion of the trailer and adapted for limited rotation relative to the trailer about any axis, and means mounted on the bed of the pick-up truck for receiving the shoe in a hitching position. This receiving means comprises abutment means engageable with the shoe for preventing movement of the shoe from its hitching position along a line extending the direction of travel of the pick-up truck and laterally of said line, hold-down members overlying portions of the shoe for preventing upward movement thereof, and a locking bar movable to and from a locking position in which it is engageable with the shoe for preventing movement of the shoe from its hitching position in the other direction along said line.

3,837,676

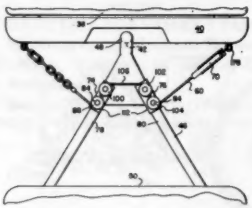
## SWAY CONTROL DEVICE FOR TRAILER HITCHES

William L. Rendessy, 8028 N. 14th Pl., Phoenix, Ariz. 85021

Continuation-in-part of Ser. No. 848,602, Aug. 8, 1969, Pat. No. 3,680,891. This application June 14, 1972, Ser. No. 262,466

Int. Cl. B60d 1/00

U.S. Cl. 280—446 B 19 Claims



A sway control device for trailer hitches comprising a cable means having opposite ends and an intermediate portion; said intermediate portion engaged by a plurality of rotary members at least one of said rotors frictionally damped to resist the movement of said rotor; said cable engaging peripheral portions of said rotors substantially less than 360° thereof and being disposed in a serpentine path about said rotors so as to provide substantial peripheral engagement of said cable therewith; opposite ends of said cable removably connectable to a towing vehicle in laterally spaced relation to the normal pivotal hitch connection of a trailer and towing vehicle; the disclosure also devoted to novel frictional bearing means for said rotors such that tension and deployment of said cable thereabout causes substantial damping and friction to resist rotation of said rotors and to thereby damp movement of said pivotal hitch connection. Further, the disclosure relates to toggle means for imposing tension upon said cable to cause substantial friction dampening of said rotors on their respective axle means.

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3,837,677

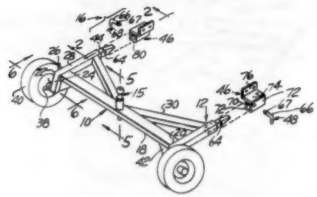
## STABILIZING TRAILER HITCH DOLLY

Robert William Haskins, 3050 Spring St., Orchard Lake, Mich. 48033

Filed Oct. 30, 1972, Ser. No. 302,216

Int. Cl. B60d 7/00

U.S. Cl. 280—476 R 10 Claims



This stabilizing trailer hitch dolly consists of a dolly frame having a pair of ground wheels on the opposite ends of a cross member carrying a trailer ball hitch. The frame has forwardly-extending laterally-spaced opposite side members perpendicular to the cross member terminating in wedge-shaped coupling members adapted to be pivotally connected to frame-mounted coupling adapters arranged to be secured permanently to the towing vehicle chassis near the rearward end thereof. The wedge-shaped coupling members provide limited rise and fall of the dolly relatively to the adapters on the towing vehicle, the vertical movement being cushioned by springs adjustably regulated by stop screws. Ground wheel axles carrying rotatable ground wheels are rigidly mounted on the down-turned opposite ends of the cross member.

3,837,678

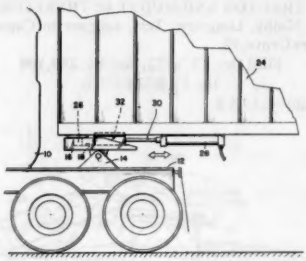
## ANTI JACK KNIFE APPARATUS

Rocco Cicero, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed May 3, 1973, Ser. No. 357,015

Int. Cl. B62d 53/08

U.S. Cl. 280—432 4 Claims



Anti-Jack Knife Apparatus comprising a horizontal member pivotally secured to the rear of a tractor and pivotable in the longitudinal direction in a vertical plane. The member is horseshoe shaped and has a longitudinal recess extending from one end disposed at a point intermediate the edges to the other end at an edge of the member. A vertical rod rigidly secured to the front of a trailer extends downward into the recess at the one end. The rod is rotatable in the recess. Means is provided with an element having extended and withdrawn positions. In the extended position, the element extends into the recess and locks the trailer and tractor into longitudinally aligned positions. The element in withdrawn position is withdrawn from the recess to unlock the trailer and tractor. Jack knifing cannot occur when the trailer and tractor are locked together.

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3,837,679

## HITCHING ASSEMBLY FOR HITCHING A TRAILER TO A TOWING VEHICLE

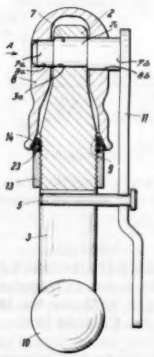
Thomas Dickmann, Karlsruhe, Germany, assignor to PEKA-Fahrzeugbau Eberhardt KG, Karlsruhe, Germany

Filed Nov. 29, 1972, Ser. No. 310,401

Claims priority, application Germany, Nov. 30, 1971, 2159234

Int. Cl. B60d 1/16, 1/06

U.S. Cl. 280—491 E 11 Claims



A hitching assembly for hitching a trailer to a towing vehicle, especially a passenger car, which comprises a rod pro-

vided with a ball at one end and a transverse bore at the other end portion of the rod. The assembly furthermore comprises mounting means attachable to the towing vehicle and comprising a sleeve slidable relative to the said other end of the rod, the sleeve and the rod being respectively provided with mutually complementary abutment means for abutting engagement with each other while an eccentric bolt journaled in cylindrical axially aligned bores of the sleeve has a portion eccentric with regard to said cylindrical bores located in said transverse bore which is eccentric to said cylindrical bores, said eccentric portion being operable when received in said eccentric bores to cause relative displacement of the rod and the sleeve as to lock the same together.

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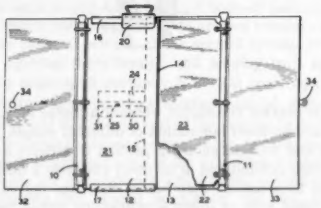
**3,837,680**
**RING BINDER**
**Peter D. Cimini, 120 Northwood Rd., Newington, Conn. 06111**
**Filed Aug. 25, 1972, Ser. No. 283,935**
**Int. Cl. B42d** *3/00*
**U.S. Cl. 281—16** **2 Claims**



A book structure that has two loose-leaf binders with outwardly folding end covers. Inwardly directed covers for the two loose-leaf binders are joined together and overlap in a mutually sliding relation. Sleeves that engage the edges of the overlapping covers, as well as a stop on one of the covers, enables the central portion of the book structure to form a stable, rigid and generally flat surface when fully extended.

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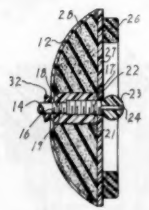
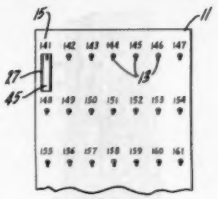
**3,837,681**
**STETHOSCOPE**
**Walker Reynolds, Jr., 327 E. 10th St., Anniston, Ala. 36201**
**Filed June 28, 1973, Ser. No. 374,471**
**Int. Cl. A61b** *7/02*
**U.S. Cl. 181—24** **2 Claims**



A rigid cup-like member has an opening therethrough for receiving an end of a sound delivery tube of a stethoscope. A deformable member extends around the cup-like member adjacent the periphery thereof and is adapted to engage and conform to the shape of the head surrounding the ear of a user so that the cup-like member together with the deformable member encases the ear of a user. The ear piece is adjustable relative to the sound delivery tube and a sound absorbing material is positioned between the cup-like member and the ear piece.

**3,837,682**
**METHOD AND APPARATUS FOR ACCOUNTING**
**Arthur G. Feller, Box 267, Cissna Park, Ill. 60924**
**Continuation of Ser. No. 154,275, June 18, 1971, abandoned.**
**This application July 20, 1973, Ser. No. 381,026**
**Int. Cl. B41l** *1/00, 1/22*
**U.S. Cl. 282—8 R** **1 Claim**



A method and apparatus for use in accounting for sales and purcheses of items at an auction. Each bidder is assigned a number. The identifying number is recorded on both parts of a two part identification tag. One part is retained by the bidder for use at the auction. The second part is marked with the bidder's name and address and is stored in numerical order during the auction. The sale of each item is recorded on a sales slip, which is stored with the second part of the bidder's identification tag during the auction, as well as on a permanent sales record. After the auction, the second part of the bidder's identification tag and the sales slips are used to record the dollar amount of the sales on a duplicate settlement slip. One copy of the duplicate sales settlement slip plus the sales slips are returned to the purchasing bidder while the other copy of the duplicate sales slip plus the second part of the bidder's identification tag are stored in numerical sequence as a permanent record of the sales.

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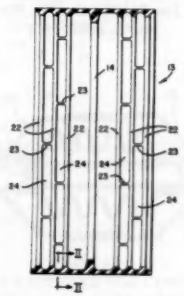
**3,837,683**
**PIPE JOINT SLEEVE**
**Thomas B. Franklin Taylor, Islington, Ontario, Canada, assignor to Ste Croix Foundry Ltd., Ste Croix, Calif.**
**Filed Aug. 2, 1973, Ser. No. 385,025**
**Claims priority, application Canada, May 9, 1973, 170827**
**Int. Cl. F16l** *21/00*
**U.S. Cl. 285—236** **11 Claims**



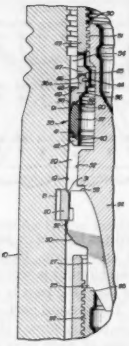
The present invention relates to a sleeve for a packing disposed about the joint existing between adjacent ends of a pair of substantially axially pipes. The inner periphery of the sleeve is provided with a plurality of non-communicating compartments which serve to inhibit leakage from such a joint.

3,837,684

## SUBSEA CASING HANGER PACK-OFF APPARATUS AND METHOD

Joseph H. Hynes, Ojai, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Oct. 30, 1972, Ser. No. 301,781
Int. Cl. F16l 35/00
U.S. Cl. 285—3 26 Claims



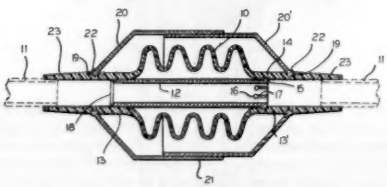
A casing hanger carries a follower and a packing assembly releasably secured to the follower, the combination being lowered on a tubular running string from a drilling rig floating in water and landed in a wellhead, the running string then being removed. A setting tool is then lowered from the rig on a tubular running string into engagement with the packing assembly to release it from the follower, the setting tool and running string imposing downweight on the packing assembly to release it from the follower and expand it into sealing engagement with the wellhead and casing hanger, after which the follower is shifted into locking or holding engagement with the expanded packing assembly. The effectiveness of the seal can be pressure tested, the pressure imposed exerting an additional downward force on the packing to apply an additional pack-off force on the packing assembly, the follower being further movable into locking or holding engagement with the expanded packing assembly.

3,837,685

## PIPE EXPANSION AND REPAIR FITTING

John H. Miller, Rt. 4 Box 300, Manitowoc, Wis. 54220

Filed Jan. 2, 1973, Ser. No. 320,168
Int. Cl. F16l 55/18
U.S. Cl. 285—45 4 Claims



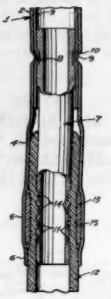
A pipe expansion and repair fitting wherein the component parts are of plastic or the like. The component parts comprise a bellows arrangement having tapered tubular ends for fitting around and connecting two ends of the pipe and being extended or repaired. A flow tube assembled in the bellows reduces turbulence. A telescoping shield protects the bellows from the adverse effects of the surrounding environment.

3,837,686

## GAS SERVICE CONNECTOR

Jonathon S. Powell, 11 W. State St., Pasadena, Calif. 91105

Filed July 20, 1973, Ser. No. 380,981
Int. Cl. F16l 55/00
U.S. Cl. 285—55 6 Claims



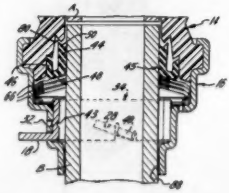
A gas service connector wherein a metal tube, having an outer and an inner lamination of different metals, is provided at one end with an enlarged portion to receive a plastic underground conduit and at its other end with a fitting for connection to a service member or the like; the enlarged end being fitted with an internal connecting sleeve mechanically interlocked to the inner lamination and extending within the plastic conduit; the enlarged end portion of the metal tube containing a seal member and being constrictible about the sleeve and plastic conduit to effect a mechanical interlock between the sleeve and plastic conduit as well as to effect a seal between the metal tube and plastic conduit.

3,837,687

## COUPLING FOR TUBING

George Hamlin Leonard, 327 Hollow Tree Ridge Rd., Darien, Conn. 06820

Filed Dec. 29, 1972, Ser. No. 319,520
Int. Cl. F16l 17/02
U.S. Cl. 285—111 21 Claims



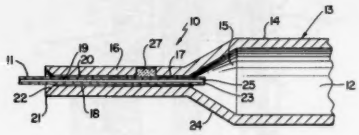
A novel fitting includes an enclosure containing a sealing ring and at least one grip-ring both of which are self-energizing into cooperation with an inserted tube having an ordinary cylindrical exterior. A device in the coupling enlarges the inner diameters of both rings to admit a tube and to release an inserted tube, without danger of the tube scarring the seal-forming surface of the sealing ring, or of the grip-ring scoring the tube.

3,837,688

## JOINT CONSTRUCTION AND METHOD OF MAKING THE SAME OR THE LIKE

Harald E. Vollbehr, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 218,236, Jan. 17, 1972, abandoned. This application July 9, 1973, Ser. No. 377,602
Int. Cl. F16l *25/00*
U.S. Cl. 285—177 12 Claims



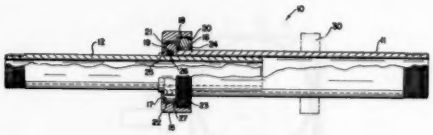
A first tubular metallic member has a relatively small transverse cross section and has a portion thereof telescopically disposed within a reduced portion of a second tubular metallic member, the reduced portion of the second tubular member having an opening therethrough and leading to a spacing between the telescoped portions. A heated securing means, such as a brazing material or a soldering material, is disposed in the opening and fills at least part of the spacing between the telescoped portions to secure the telescoped portions together whereby the heat affected area of the first tubular member is confined inside the telescoping portion of the second tubular member, causing the heated portion of the first tubular member to retain substantially its original strength.

3,837,689

## TELESCOPING TUBE ASSEMBLY

Geza M. Csatlos, Wadsworth, Ohio, assignor to Akron Standard, division of Eagle-Picher Industries, Inc., Akron, Ohio

Filed Aug. 28, 1973, Ser. No. 392,252
Int. Cl. F16l *15/02*
U.S. Cl. 285—302 1 Claim



An assembly for maintaining a fluid pressure seal between rigid telescoping conduit tubes. The assembly comprises a flange nut, a round flange, a ring collar, and elastomeric annular seals located and positioned coaxially around rigid telescoping conduit tubes.

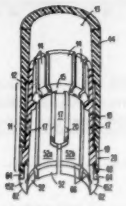
3,837,690

## INFORMATION STORAGE ARTICLES EMPLOYING RESILIENT LOCKING SLEEVES

Harvey R. Fraser, Jr.; Richard T. Larson, both of Boulder, and Helfried O. Rinkleib, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1973, Ser. No. 386,234
Int. Cl. F16l *39/00*
U.S. Cl. 285—319 19 Claims

A tape spool and cover are latched together by a tubular sleeve arrangement. A hollow core tape spool has an inner frustro-conical camming surface adjacent an axially outwardly facing shoulder. A releasable latch includes a unitary resilient sleeve inserted into the hollow core and is cammed radially inwardly for creating radial outward forces on the opposite sleeve end outside the spool. A first axial end portion of the sleeve has a first type locking resilient finger extending out of the hollow core and a second type resilient finger in locking engagement with the hollow core tape spool. A radially inwardly extending annular rib divides the first and second axial end portions to provide a bending moment transfer ring. The slots defining the axially extending fingers extend to and



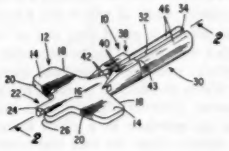
preferably into the rib for providing a moment bridge for transferring the radial inward compression on the second axial end portion to a radially outwardly exerting force in the first axial end portion. It is preferred that such slots terminate on or near a common circumferential line extending around the sleeve. The outer end portion of the first type of fingers includes a latching shoulder, plus a camming surface for enabling radial inward camming all first type fingers for enabling releasable engagement between the tape spool and a cylindrical cover.

3,837,691

## KNOT TYING APPARATUS

Richard N. Smythe, 4082 Deep Valley, Dallas, Tex. 75234

Filed Apr. 9, 1973, Ser. No. 349,486
Int. Cl. D03j *3/00*
U.S. Cl. 289—17 9 Claims



Disclosed is an improved knot tying implement for use in attaching a line to an object such as a fishing lure, hook or the like.

3,837,692

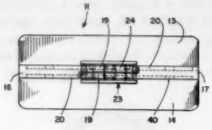
## SAFETY FASTENER FOR CONTAINER

Grover W. Ayers, Vinton, Va., and Gerald B. Zinnbauer, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed June 7, 1973, Ser. No. 367,917
Int. Cl. E05b *65/52*; E05c *19/10*
U.S. Cl. 292—152 9 Claims

A safety fastener for a two-section container having an integral slide which is selectively engaged with a portion of one

or both sections of the container to permit the container to be opened or to be maintained in a locked position. The slide has



a resilient portion which upon being depressed permits movement of the slide from a locked position to a free position thereby allowing the container to be opened.

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**3,837,693**

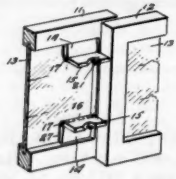
**LOCKS FOR SLIDING MEMBERS**

**Edward J. Adickes, deceased, P.O. Box 3385, late of Idialantic, Fla. 32903 (Dorothy Randall Frisch, executrix)**

**Filed Dec. 7, 1972, Ser. No. 312,959**

**Int. Cl. G05c** *3/04*

**U.S. Cl. 292—207** **4 Claims**



This invention is directed to locking mechanisms for overlapping parallel sliding members, such as sliding doors, double sash windows and the like, comprising a hinge member having two leaf members, each of which has knuckles aligning with the other to receive a pivot pin; one of said leaf members being provided with means for permanently affixing it to one sliding member, and the other leaf member being freely pivotal. The freely pivotal leaf member has a spring loaded detent positioned transversely thereof, and the fixed leaf member has an aperture in a pivot knuckle positioned to receive the detent when the said leaf members are substantially perpendicular to each other. The freely pivotal leaf member has an arcuate recess in the free edge thereof adjacent the spring loaded detent, to provide access to said detent to release the locking of the detent from the aperture.

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**3,837,694**

**HYDRAULIC HEAD CLOSURE MECHANISM**

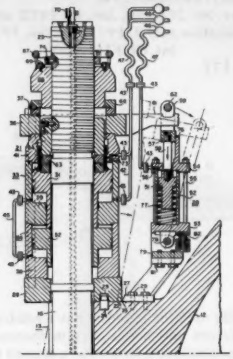
**Erling Frisch, deceased, late of Pittsburgh, Pa. (Dorothy Randall Frisch, executrix), and Harry N. Andrews, Export, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed July 8, 1970, Ser. No. 53,198**

**Int. Cl. B65d** *45/30*

**U.S. Cl. 292—256.75** **15 Claims**

In order to reduce the time required for removal and replacement of a reactor vessel closure head, previously used studs for securing the closure head are replaced with a reduced member of larger diameter bolts located in radial slots in vessel and head flanges. All bolts are provided with individual hydraulic tensioning and tilting devices mounted on the head flange. The devices are operated simultaneously to



preload the bolts and to actuate the bolts and the devices to an inclined position to permit the head to be removed when the tension load on the bolts is released.

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**3,837,695**

**BUMPER MEMBER FOR A VEHICLE**

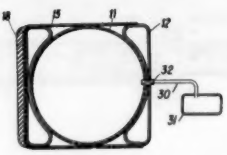
**Ernst-Gunter Haase, Egmating, and Rudolf Konig, Ottobrunn, both of Germany, assignors to Messeschmitt-Bolkow-Blohm, Munich, Germany**

**Filed Feb. 15, 1973, Ser. No. 332,593**

**Claims priority, application Germany, Feb. 18, 1972, 2207560**

**Int. Cl. B60r** *19/08*

**U.S. Cl. 293—71 P** **4 Claims**

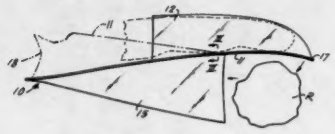


A bumper-like member for a vehicle is formed of a closed flexible hollow body containing a highly compressible fluid, such as air, and a bending support beam on which the hollow body is supported. Preferably, a flexible cover member is secured to the supporting beam and encloses the hollow body. The compressible fluid in the hollow body can be at ambient pressure or at a pressure above ambient. A pressure release valve is connected to the hollow body and is arranged to open when the compressible fluid reaches a predetermined level after the hollow body has contacted an obstacle in the path of the vehicle. An additional bending support beam can be positioned in bearing contact with the hollow body on the opposite side from the other supporting beam and further hollow bodies can be mounted on the additional supporting beam on the opposite side from the other hollow body. In addition to the pressure release valve, an opening is provided into the hollow body through which air can be reintroduced after it has been released through the release valve.

## 3,837,696
## DISPOSABLE POCKETED MANUAL REFUSE COLLECTOR

Grace L. Dahlke, 5212 W. Irving Park Rd., Chicago, Ill. 60641

Filed Nov. 17, 1972, Ser. No. 307,646
Int. Cl. A47l *13/52*; B65g *7/12*
U.S. Cl. 294—1 R 9 Claims



A disposable pocketed manual refuse collector, in a normally flat form for convenient stacking in dispensing packet for distribution, comprises a permanently secured assembly of flexible sheet material members, namely, a palm covering member supporting on one face a finger cot member and on its opposite face a pocket member so related that a users fingers can be received in a glove between the finger cot member and the palm member for manipulating refuse into a pocket defined between the pocket member and the palm member opening forwardly under the fingers and with the edge of the pocket member providing a scoop. After the pocket has been loaded, the forwardly extending finger cot portion of the palm member can be inserted into the mouth of the pocket as a retaining closure.

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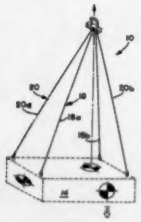
## 3,837,697
## ADJUSTABLE MULTI-LEG LOAD-CARRYING SLING APPARATUS

Donald B. Goodrich, 1935 Sandalwood, El Centro, Calif. 92243

Filed Dec. 18, 1972, Ser. No. 316,324
Int. Cl. B66c *1/12*
U.S. Cl. 294—74 3 Claims



A multi-leg sling apparatus is presented for lifting loads having individual sling legs adjustable in length in a simple, and highly reliable manner to enable balanced and unbalanced loads to be supported in a variety of different orientations.

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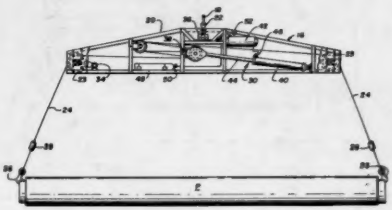
## 3,837,698
## LIFTING APPARATUS

Robert Don Foster, Houston, Tex., assignor to CRC-Crose International, Inc., Houston, Tex.

Filed July 29, 1971, Ser. No. 167,386
Int. Cl. B66c *1/10*
U.S. Cl. 294—81 R 4 Claims

A lifting spreader bar suitable for lifting pipe or other articles from one floating vessel to another wherein such vessels could have movement relative to each other, said spreader bar having an elongate structure, lifting lines extending from opposite ends of said elongate structure, means for establishing a preselected tension in said lifting lines while they are moving relative to said elongate structure, means indicating such relative movement of the lifting lines, a hoisting connection to the central portion of said elongate structure, and means for indicating the angle of said hoisting connection with respect to vertical.



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## 3,837,699
## METHOD AND APPARATUS FOR BREAKING ANIMAL CARCASSES AND HANDLING MEAT PRODUCTS

A. D. Anderson, Sioux City, Iowa; Walter E. Lauridsen, South Sioux City, Nebr., and Charles L. Overstreet, Sioux City, Iowa, assignors to Iowa Beef Processors, Inc., Dakota City, Nebr.

Division of Ser. No. 706,557, Feb. 19, 1968, Pat. No. 3,593,369. This application July 15, 1971, Ser. No. 163,001
Int. Cl. B66c *1/30*
U.S. Cl. 294—118 6 Claims

Meat-supporting tongs are provided with opposed plates which carry a plurality of blunt projections for engaging the meat, and pointed projecting members which extend a greater distance than the blunt projections to promote initial engagement between the plates and the meat prior to movement of the blunt projections into contact with the meat. A chain or other elongated flexible member is used to attach the tong support linkage to an overhead support rail.

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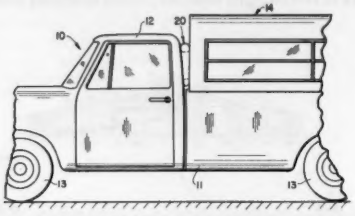
## 3,837,700
## INFLATABLE WEATHER SEAL FOR CAMPER-TRUCK COMBINATIONS

Gary C. Van Slyke, 317 N. Chestnut, Jefferson, Ohio 44047

Filed Aug. 23, 1972, Ser. No. 283,198
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC 6 Claims

A method and apparatus for establishing a weathertight passageway between aligned window openings in opposed

spaced walls of a vehicle cab and a vehicle-carried camper. A tubular inflatable weatherseal is positioned between the walls



around the window openings and inflated to establish a weathertight passageway communicating the window openings.

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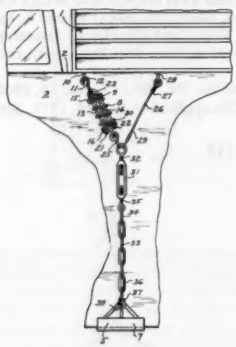
**3,837,701**
**CAMPER MOUNTING APPARATUS**
**George B. Curtis, and Betty L. Curtis, both of Hooper, Colo., assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest**
**Filed Oct. 15, 1973, Ser. No. 406,496**
**Int. Cl. B60p** *3/32*
**U.S. Cl. 296—23 MC** **2 Claims**



Camper mounting apparatus comprises a member having one end affixed to the chassis of a pickup truck and a free end extending transversely beyond the bed of the truck. An adjustable tension spring has one end affixed to a first point on a camper seated in the bed of the truck. A cable has one end affixed to a second point on the camper spaced from the first point and another end affixed to the other end of the spring. A turnbuckle has one end affixed to the common ends of the spring and the cable. A chain has one end affixed to the other end of the turnbuckle and another end affixed to the free end of the member.

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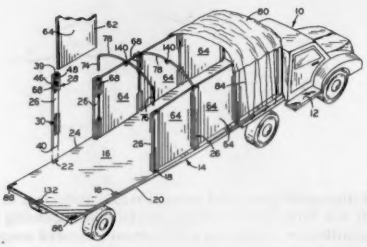
**3,837,702**
**SYSTEM FOR CONVERTING FLATBED TO LOWSIDE TRAILERS**
**Oran L. Case, 269 S. Roberts Ave., Lima, Ohio 45804**
**Filed July 10, 1972, Ser. No. 269,992**
**Int. Cl. B62d** *33/00*
**U.S. Cl. 296—36** **5 Claims**

A series of wooden stakes each has a bracket mechanically secured thereto one at each of the opposite ends of the stake. The bracket includes a base and two laterally offset flanges which are spaced sufficiently from the stake to form a pocket for receiving the edges of panels between adjacent spaced stakes. The bracket includes at the upper end a cylinder welded thereto for receiving a bow which is positioned with one end in each of the oppositely facing stakes at opposite sides of the bed. At the rear of the trailer are two corner stakes



each with a bracket having a flange adapted to receive a panel at the side of the flatbed and a transverse second flange for holding upright a panel at the end of the bed. The stakes, with the exception of the corner stakes, are interchangeably positionable at either side of the flatbed.

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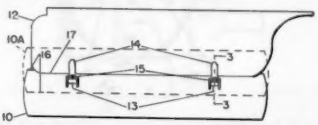
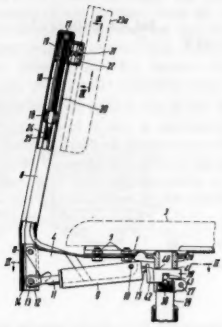
**3,837,703**
**GLARE SHIELDS**
**Forrest E. Holladay, 14314 Shadywood Dr., Plymouth, Mich. 48170**
**Continuation of Ser. No. 19,747, March 16, 1970, abandoned.**
**This application Oct. 26, 1971, Ser. No. 192,603**
**Int. Cl. B60j** *3/02*
**U.S. Cl. 296—97 C** **9 Claims**



A glare shield assembly for mounting on a sun visor of a motor vehicle. A light-filtering shield is mounted in offset relationship to and on a pair of spaced pivots attached to and below the lower edge of the sun visor. The offset pivot makes it possible to position the shield as a lower extension of the visor either by pivoting the shield forwardly of the visor or rearwardly of the visor. Further, the pivot is located closer to one of the horizontal edges of the sheild than to the opposite horizontal edge of the shield so that in one of its positions more of the shield projects below the visor than in the other of its positions. In addition, an area of the shield has different filtering characteristics on one side of its pivot than on the other side of its pivot for selectively to overcome different glare conditions.

**3,837,704**
**SEATING FURNITURE**
**Fritz Bauer, 8503 Altdorf, Schulzstr. 14, Germany**
**Filed June 21, 1973, Ser. No. 371,968**
**Int. Cl. A47c** *7/40*
**U.S. Cl. 297—345** **7 Claims**



An article of seating furniture having means to continuously adjust the seat height, back rest height and back rest tilt through the operation of a single operating lever which can be operated from a seated position. Motion of the lever in one direction releases a gas spring controlling seat height, motion of the lever in a second direction releases a gas spring controlling back rest tilt, and rotation of the lever causes height adjustment of the back rest.

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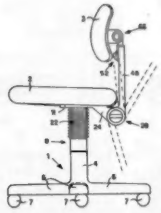
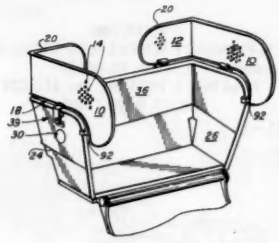
**3,837,705**
**OFFICE CHAIR**
**Franco Marraccini, Massa, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea (Torino), Italy**
**Filed Jan. 24, 1973, Ser. No. 326,334**
**int. Cl. A47c** *1/00*
**U.S. Cl. 297—353** **4 Claims**



An office chair in which the seat height and back inclination and height are adjustable and having a frictional pivotal coupling between the back and the back supporting member. The adjustment of the back inclination is accomplished with a hub affixed to the back supporting member and a slider disposed for axial motion within said hub and angularly fixed with respect to the chair seat. A pair of projections in the slider ride in helical grooves in the hub so that as the slider is moved axially the back is rotated. A rack attached to the back and slidable in the back supporting member is engaged by a spiral gear member attached to the back supporting member for controlling the height of the back.

**3,837,706**
**AMUSEMENT RIDE SEAT AND SAFETY GUARD**
**Eldon J. Suttles, Jacksonville, Ill., assignor to Eli Bridge Company, Jacksonville, Ill.**
**Filed Feb. 21, 1974, Ser. No. 444,279**
**Int. Cl. B60r** *21/10*
**U.S. Cl. 297—384** **4 Claims**



This invention relates to a safety guard which is mounted on the upper surface of the seat back and side frames on a ferris wheel seat structure to prevent the long hair of persons riding therein from becoming entangled in the adjacent moving structure.

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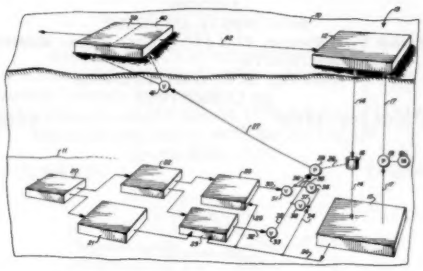
**3,837,707**
**HYDRAULIC MINING SYSTEM**
**Oliver B. Kilroy, 5 Calle Carta St., Tucson, Ariz. 85716**
**Continuation-in-part of Ser. Nos. 293,401, Sept. 29, 1972, Pat. No. 3,790,214, and Ser. No. 398,951, Sept. 20, 1973, which is a continuation-in-part of Ser. No. 293,401,. This application Oct. 17, 1973, Ser. No. 407,072**
**Int. Cl. E21c** *41/00*
**U.S. Cl. 299—8** **6 Claims**



An hydraulic mining system comprising the generation of power from a column of water which downflows from a surface reservoir to an underground reservoir and in which at least a portion of spent water is recirculated and with the column of water operating a turbine, mechanically driving a pump included in a transfer tube extending from the mining level to the ground surface from the turbine, converting waste rock into slurry form, converting mineral-containing ore into slurry form, introducing the slurries into said tube to be pumped upwardly therein, separating water from said slurries at the ground surface and returning this spent water to the surface reservoir.

In three embodiments, the mineral components of the ore are separated from the ore by micro-bacteriological processes and apparatus which includes a mill and a fermentation tank.

In one of these embodiments, the separation is substantially completed at the mining level. In a second embodiment, it is initiated at the mining level, continued in the transfer tube and completed at the ground surface. In a third embodiment, it is carried out substantially at the ground surface.

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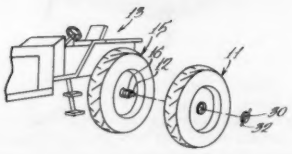
**3,837,708**

## QUICK-CONNECT WHEEL MOUNTING MEANS

**Daniel C. Donnell, RFD, Malta, Ill. 60150**

**Filed Nov. 2, 1973, Ser. No. 412,327**
**Int. Cl. B60b** *11/00*
**U.S. Cl. 301—1** **13 Claims**



A quick-connect mechanism for removably mounting a wheel to an axle. The mechanism includes a hub portion and means for constricting the hub portion into secured association with the axle. The constrictible hub further defines a male attachment portion adapted to receive a female attachment portion of a wheel mount. The wheel mount may be threadedly secured to the hub. A lock is provided to prevent loosening of the wheel mount on the hub in use.

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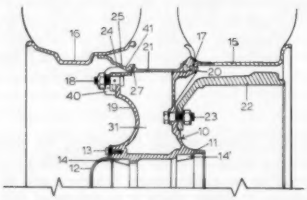
**3,837,709**

## DUAL WHEEL ASSEMBLY

**Russell K. Williamson, Erie, Pa., assignor to Erie Malleable Iron Company, Erie, Pa.**

**Filed Aug. 28, 1972, Ser. No. 284,356**
**Int. Cl. B60b** *11/06*
**U.S. Cl. 301—13 SM** **1 Claim**



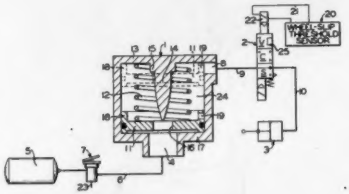
A spacer block for a dual wheel assembly. The spacer block has a curved bottom to rest on the outside diameter of the wheel spoke and tapered dovetail flanges on the sides of the block receive the tapered side flanges of the spoke so that the spacer block is held against rotation with the rim should the rim slip relative to the wheel. The blocks have inclined protrusions on their ends which are forced under the rims thereby holding the rims rigidly against an inclined surface on the spokes.

**3,837,710**

## ANTI-SKID APPARATUS FOR WHEELS

**Erich Reinecke, Beinhorn; Fritz Isernhagen, Letter; Alfred Klatt, Ronnenberg; Lutz Weise, Misburg, and Karl-Heinz Maisold, Berenbostel, all of Germany, assignors to Westinghouse Bremsen-und Apparatebau GmbH, Hannover, Germany**

**Filed Nov. 30, 1972, Ser. No. 310,681**
**Claims priority, application Germany, Dec. 27, 1971, 2164833**
**Int. Cl. B60t** *8/12*
**U.S. Cl. 303—21 F** **6 Claims**



Anti-skid apparatus for vehicle wheels including wheel-slip threshold sensor means for detecting the value of deceleration rate of a vehicle wheel at which wheel-slip, due to braking action and prevailing road surface condition, becomes imminent and for emitting a control impulse accordingly, said apparatus being operable responsively to said control impulse for first causing a reduction of brake-applying pressure to a reduced degree at which neutralization of the wheel-slip tendency is initiated, secondly for maintaining the reduced brake-applying pressure at the reduced degree until the wheel resumes normal rotation, and thirdly for effecting restoration of brake-applying pressure at a progressive rate compatible with the existing road friction condition.

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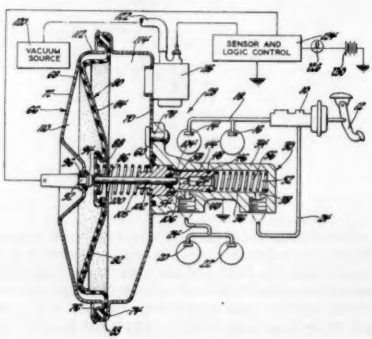
**3,837,711**

## ANTI-LOCK BRAKE PRESSURE MODULATOR

**Robert M. Van House, and Jimmy C. Mayne, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.**

**Filed May 9, 1973, Ser. No. 358,713**
**Int. Cl. B60k** *8/06*
**U.S. Cl. 303—21 F** **5 Claims**




A brake pressure modulator includes a housing having a bore in which a piston is slidably movable and divides the bore into an outlet chamber communicating with the master cylinder and an outlet chamber communicating with the wheel

brakes. A passage in the piston connects the inlet and outlet chambers to permit free fluid communication between the master cylinder and the wheel brakes during normal brake actuation. A plunger operatively associated with a fluid motor extends sealingly through the housing and into the outlet chamber. Brake fluid pressure in the outlet chamber urges the plunger outwardly of the outlet chamber and the fluid motor into engagement of the housing to support the plunger against movement by the brake pressure from a normal position. A valve arrangement is provided to close the passage in the piston upon movement of the plunger from the normal position by a pressure differential acting on the fluid motor in response to a sensed incipient wheel lock condition. Further movement of the plunger forcibly moves the piston to decrease the volume of the inlet chamber and increase the volume of the outlet chamber so that the brake fluid pressure communicated to the wheel brake is decreased. The fluid motor reciprocates the plunger and piston to cyclically release and reapply the brakes. Upon termination of the sensed wheel condition the plunger and fluid motor return to the normal position separated against movement by the brake pressure by engagement with the housing.

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**3,837,712**

## ANTI-LOCKING BRAKING DEVICE

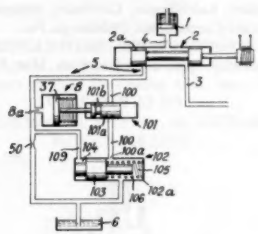
**Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, (Seine) Paris, France**

**Filed July 19, 1973, Ser. No. 380,852**

**Claims priority, application France, July 31, 1972, 72.27601**

**Int. Cl. B60t** *8/12*

**U.S. Cl. 303—21 F** **3 Claims**



An anti-locking braking device for a wheel of a motor vehicle for reducing jerky braking, wherein a fluid operated brake cylinder is connectable, when the wheel is about to lock, to a fluid outlet comprising first and second flow paths leading to a reservoir. In the first flow path a restriction is provided downstream of a first chamber whose volume is increased by movement therein of a spring biased first piston under the effect of pressure of the fluid admitted to the chamber. Such movement is arranged to open a first valve in the second flow path, and fluid form the brake cylinder to the reservoir can bypass the restriction and thus a faster rate of pressure drop in the brake cylinder can be achieved, provided a second valve, also in the second flow path is open. Movement of this second piston controls opening and closing of the second flow path by the second valve which is open when fluid pressure in the first flow path upstream of the restriction exerts a lower force on one side of the second piston than the force exerted on the other side by a spring.

**3,837,713**

## LOAD SENSING PROPORTIONING VALVE

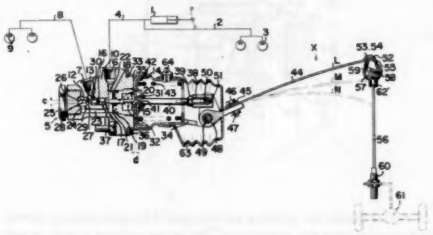
**Moasuke Masuda, Higashi-Matsuyama; Toshihiro Abe, Kawagoe, and Yoshihiko Kato, Higashi-Matsuyama, all of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan**

**Filed Mar. 19, 1973, Ser. No. 342,712**

**Claims priority, application Japan, Mar. 24, 1972, 47-29027**

**Int. Cl. B60t** *8/18*

**U.S. Cl. 303—22 R** **5 Claims**



A load sensing proportioning valve for detecting the loading weight condition of a vehicle as represented by a distance between upper and lower positions of a spring. In this fashion, the fluid pressure acting on a rear wheel brake cylinder is controlled. The valve includes a push rod of a plunger; a loading spring coaxially mounted on the side of the push rod of the plunger, the load of the loading spring being applied to a housing during non-operation of a brake; a spacer spaced apart from the push rod arranged between the push rod and the loading spring; a leaf spring for reducing a load of the loading spring, the load being applied to one end of a lever and the leaf spring through connecting member; and a connecting wire wherein displacement at the other end of the leaf spring does not provide any displacement to the loading spring but transmits only a load or force.

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**3,837,714**

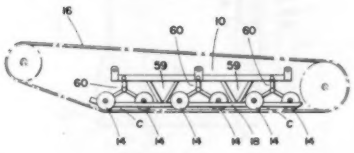
## ENDLESS TRACK SUSPENSION SYSTEM

**Paul E. Russ, Sr., Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.**

**Division of Ser. No. 48,587, May 14, 1970, Pat. No. 3,761,143. This application June 21, 1973, Ser. No. 372,439**

**Int. Cl. B62m** *27/02*

**U.S. Cl. 305—24** **2 Claims**

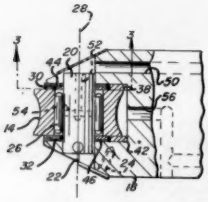


A wheel and slide suspension system for supporting or aligning a flexible and endless track from a wheel substitute vehicle used over various types of terrain and climatic conditions. Under hard-packed terrain conditions, wheels support the track away from the slide; and under soft terrain conditions, the track deflects to a position to engage and receive support from the slide. Lugs projecting from the track are engagable with the slide to maintain the track in longitudinal alignment.

## 3,837,715
## ROLLER GUIDE INCLUDING AXIAL BEARINGS

Nils Erik Bock, Smedjebacken, Sweden, assignor to Morgardshammar AB, Smedjebacken, Sweden

Filed Feb. 5, 1973, Ser. No. 329,836
Int. Cl. F10c 21/00
U.S. Cl. 308—6 R 10 Claims

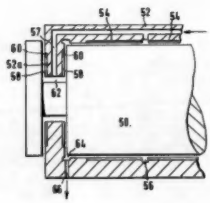


A roller guide for guiding an elongated longitudinally traveling material into the grooves of the main rolls of a rolling mill has a pair of rollers, one on each side of the traveling material, mounted for rotation on parallel axes and contacting the material. Thrust bearings are provided at the upper and lower ends of each roller, each thrust bearing comprising an annular disc encircling a fixedly supported axle and constrained from rotation about the axle by a retainer device. Each disc is a separate part not secured to other parts of the roller guide. A lubricant and coolant flows under pressure through the axle, through a radial bearing of the roller and through an axial space between each end of the roller and its respective thrust bearing.

## 3,837,716
## AIR, GAS OR FLUID BEARINGS

Nigel Stafford David Allen, Poole, and Walter Kammerling, Bournemouth, both of England, assignors to Federal-Mogul Westwind Air Bearings Limited, Branksome, Pool, Dorset, England

Filed Nov. 15, 1972, Ser. No. 306,805
Claims priority, application Great Britain, Nov. 16, 1971, 53090/71
Int. Cl. F16c 17/16
U.S. Cl. 308—9 11 Claims

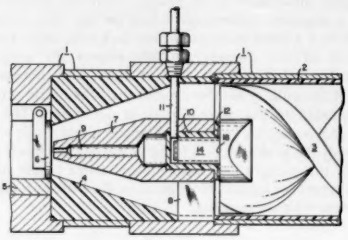


A fluid bearing which comprises first and second mutually facing relatively rotatable members, one of the mutually facing surfaces having formed therein a recess acting as a fluid reservoir to which is supplied pressure fluid via a supply conduit and a series of blind ended, preferably parallel, grooves formed in that one surface and in communication with the recess.

## 3,837,717
## AIR BEARING

Harry P. Kipple, Penn Hills, Pa., and Virgil J. Cozzarin, Clarence, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 7, 1972, Ser. No. 278,700
Int. Cl. F16c 17/16
U.S. Cl. 308—9 12 Claims

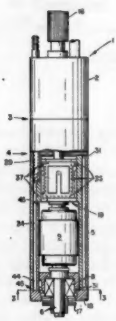


An air bearing is disclosed for use in a pump which moves fluidized solid resinous powders. The bearing comprises a shaft inside a casing of a low-friction thermally non-conductive material. The shaft is provided with keyways thereby preventing the powders from entering the bearing, melting, and jamming the pump.

## 3,837,718
## MACHINING DEVICE WITH A ROTARY WORKING SPINDLE

Fritz Nattefort, Leichlingen, Germany, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 2, 1972, Ser. No. 231,116
Claims priority, application Germany, Mar. 5, 1971, 2110662
Int. Cl. F16c 37/00
U.S. Cl. 308—77 14 Claims

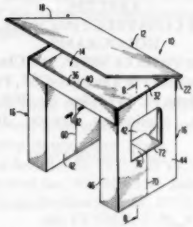


A machining device which includes a housing surrounding a rotary working spindle and a motor for rotating the spindle along with internally located arrangements for circulating a coolant and a lubricant through the device.

## 3,837,719
## COLLAPSIBLE DESK AND CHAIR

Abraham Barron, Hallendale, Fla., assignor to Abe Hochhauser, Queens, N.Y., a part interest

Filed July 25, 1972, Ser. No. 274,970
Int. Cl. A47b 41/00
U.S. Cl. 312—195 6 Claims

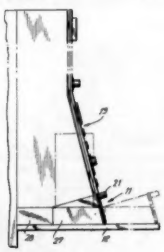


A collapsible desk and chair formed of paperboard, cardboard or the like. The desk is formed from a plurality of blanks which are secured together to provide a unitary construction. The connected blanks define a top member, a pair of side support members and an inner shelf member which can be folded together into a relatively flat configuration for storage, and which can be unfolded and erected to define a desk having a pivotable top member and inner and side shelves for storage. The chair is formed from a base member blank and a seat member blank which are secured together to provide a unitary construction, and a separate inner support member formed of a single blank. The seat member is pivotally connected to the base member, and the separate inner support member is foldable and receivable within the erected base member for the purpose of reinforcing it and is supported by connected foldable flaps on the lower portion of the base member.

## 3,837,720
## AUXILIARY CABINET FOR COMPUTER CONSOLE

Sam Boris, Kingston, and Larry R. Nye, Woodstock, both of N.Y., assignors to Data Processing Aids, Inc., Ulster Park, N.Y.

Filed Sept. 26, 1973, Ser. No. 400,761
Int. Cl. A47b 53/00
U.S. Cl. 312—198 8 Claims

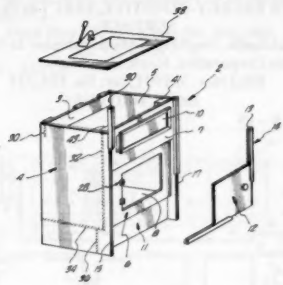


An auxiliary cabinet which fits into the space between a computer console and the usual desk beneath same, has a hinged front and side walls dimensioned to engage the sides of the console. The cabinet makes it possible to use the space between the console and the desk for storage of small accessories to be used with the computer as well as writing instruments and signs of various types.

## 3,837,721
## MOLDING AND CABINET CONSTRUCTION

Glen Dell Manlove, 1109 S. Sixth Ave., Arcadia, and Paul Kenneth Ishler, 24336 Ridgewood, El Monte, both of Calif.

Filed Dec. 11, 1972, Ser. No. 313,775
Int. Cl. A47b 43/00, 47/00
U.S. Cl. 312—257 5 Claims

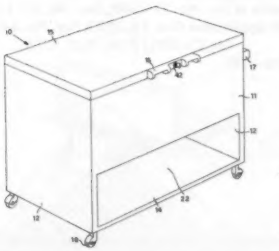


The cabinet construction of the present invention utilizes a key hole method of joining panel members and a plastic molding for the exposed edges. The plastic molding is designed to snap on or slide onto the key hole tongues of the cabinet panel edges. The molding is such a size and construction to permit section blanks of a panel to be removed and the perimeter of the blank to be covered with the molding which thereby permits it to be utilized as a door or a decorative panel without any loss of material. In the preferred embodiment, the molding consists of a rear flat surface designed to interface with the back of the panel and a front and top surface designed to provide a decorative finish and to overlap the interface of the panel key hole tongue and surface.

## 3,837,722
## TOP-ACCESS CABINET FOR SUSPENDED FILES AND THE LIKE

Pietro Ceccarelli, Massa, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea (Torino), Italy

Filed Apr. 5, 1973, Ser. No. 348,412
Claims priority, application Italy, Apr. 6, 1972, 1001/72
Int. Cl. A47b 81/00
U.S. Cl. 312—276 6 Claims



A top-access cabinet including a lid movable manually from a closed position to an open position in which the lid is adjacent the rear wall of the cabinet, comprising a bail having a crosspiece pivotally connected to the lid, two arms pivotally connected to the side walls of the cabinet and a spring tensioned between at least one of the said arms and the cabinet for balancing the weight of the lid in any intermediate position between the closed position and the open position. Two support members fixed to the top edge of the rear wall are each

provided with a slot into which a bent rim of rear edge of the lid enters during the last part of the closing movement to prevent the rear edge of the lid being lifted when the lid is closed.

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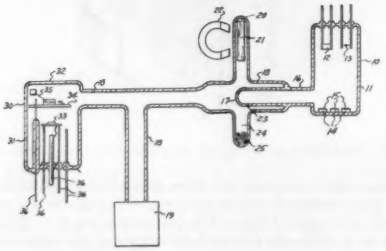
**3,837,723**

## METHOD FOR MAKING HYBRID RADIANT ENERGY SENSOR WITH SOLID STATE ELEMENT AND TRANSFER ENERGY-SENSITIVE, ELECTRON-EMISSIVE SURFACE

**Clive E. Catchpole, Southfield, Mich., assignor to Galileo Electro-Optics Corporation, Sturbridge, Mass.**

**Filed Nov. 3, 1971, Ser. No. 195,327**
**Int. Cl. H01j** *9/38*
**U.S. Cl. 316—19** **6 Claims**



A method for making a hybrid radiant energy sensor with a vacuum enclosure, an energy-sensitive electron-emissive surface, and at least one internal solid state electron multiplying element, where the energy-sensitive electron-emissive surface is formed outside the vacuum enclosure and subsequently transferred in a vacuum atmosphere into the vacuum enclosure and sealed therein, eliminating exposure of said solid state electron multiplier element to the alkali metals used in forming the energy-sensitive electron-emissive surface.

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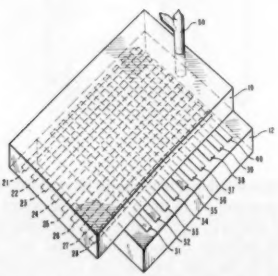
**3,837,724**

## GAS PANEL FABRICATION

**Peter H. Haberland; Frank M. Lay, both of Woodstock; Thomas J. Murphy, Rhinebeck; Marvin B. Skolnik; Oliver S. Spencer, both of Woodstock; Peter R. Wagner, Lake Katrine; Howard L. Whitaker, and Donald M. Wilson, both of Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Continuation of Ser. No. 214,348, Dec. 30, 1971, abandoned.**
**This application Oct. 10, 1973, Ser. No. 405,205**
**Int. Cl. H01j** *9/38, 9/18, 9/26*
**U.S. Cl. 316—20** **27 Claims**



A method is disclosed for the fabrication of a gas panel which includes depositing parallel lines as electrical conductors on a pair of glass plates, providing a protective coating of glass over the parallel lines, placing a sealing material between the glass plates around the periphery thereof, spacing the glass plates a given distance apart, firing the assembly in an oven to seal the glass plates together with a chamber therebetween, evacuating the chamber, filling it with an illuminable gas, and exposing each parallel lines at one end of each glass plate as an electrical contact.

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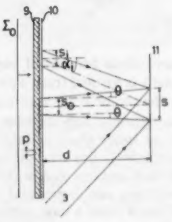
**3,837,725**

## SYSTEMS FOR CONSTRUCTING SMALL FRESNEL HOLOGRAMS

**Claude Bricot; Jean Pierre Le Merer, and Claude Puech, all of Paris, France, assignors to Thomson-CSF, Paris, France**

**Filed June 16, 1972, Ser. No. 263,616**
**Claims priority, application France, June 29, 1971, 71.23621**
**Int. Cl. G02b** *27/00*
**U.S. Cl. 350—3.5** **11 Claims**



The present invention relates to the construction of Fresnel holograms having an area smaller than the area of the non-uniform transparency object utilised to construct them.

The invention relates to a construction system wherein the illumination of the object is effected through the medium of an optical concentrating system converting a parallel beam, into a set of elementary parallel beams intersecting in the exposure window.

The invention can be applied to the high-density storage of optical data.

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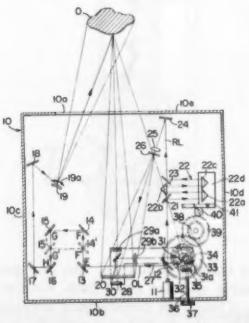
**3,837,726**

## CAMERA FOR MAKING HOLOGRAMS

**Masane Suzuki; Motonori Kanaya, and Kazuhisa Seki, all of Omiya, Japan, assignors to Fiji Photo Optical Co., Ltd., Uetake-cho, Omiya-shi, Japan**

**Filed Nov. 5, 1973, Ser. No. 412,889**
**Claims priority, application Japan, Jan. 20, 1973, 48-9026**
**Int. Cl. G03c** *7/00;* **G03b** *27/10*
**U.S. Cl. 350—3.5** **9 Claims**



A camera for making a hologram is provided with a device for varying the optical path length of the object light or the

reference light. The camera includes a range finder to measure the distance from the camera to the object to be recorded on the hologram. The range finder has a rotatable mirror which is rotated to determine the distance. The rotatable mirror is associated with the device for varying the optical path length of the object light or the reference light so that the optical path length of the light may be varied according to the distance of the object to be recorded on the hologram. Both the object light and the reference light may be provided with the optical path length varying device so that the optical path length of one of the lights may be shortened and that of the other may be lengthened.

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**3,837,727**

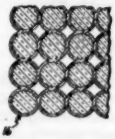
**MULTIFIBER OPTICAL COMPONENTS**

**Frederick H. Norton, Gloucester, Mass., assignor to American Optical Company, Southbridge, Mass.**

**Continuation of Ser. No. 43,752, July 19, 1960, abandoned, which is a division of Ser. No. 669,883, July 3, 1957, Pat. No. 2,992,516. This application Jan. 24, 1972, Ser. No. 220,527**

**Int. Cl. G02b** *5/16*

**U.S. Cl. 350—96 B** **17 Claims**



Optical image transfer components and devices comprising a plurality of multifiber elements bonded together to form an optical image-transmitting device. Each of the multifibers comprised of a core clad with clear transparent glass. Each of the multifibers having opposite ends fixedly fused together in side-by-side identically geometrically patterned arrangements.

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**3,837,728**

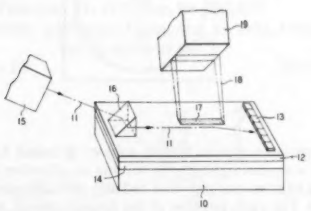
**INJECTED CARRIER GUIDED WAVE DEFLECTOR**

**Ralph Andre Logan, Morristown; James Hoffman McFee, Colts Neck; Robert Edward Nahory, Lincroft, and Martin Alan Pollack, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.**

**Filed Sept. 26, 1973, Ser. No. 400,852**

**Int. Cl. G02b** *5/14*

**U.S. Cl. 350—96 WG** **8 Claims**




There is disclosed an injected carrier device for deflecting a guided beam of radiation, such as the 10.6 micron beam from a conventional carbon dioxide laser. The waveguide structure comprises a lightly doped gallium arsenide thin film formed on a lower refractive index aluminum gallium arsenide substrate. Free charge carriers are selectively injected into a localized region of the film laterally displaced from the center of the path of the beam therein. Sufficient densities of carriers are injected either optically or electrically to cause the beam to deflect within the plane of the film away from the localized region. Deflection angles of the order of 1° to 2° and response times as short as 6 nanoseconds have been experimentally obtained with the device.

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**3,837,729**

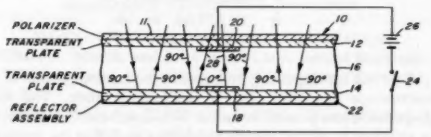
**LIQUID CRYSTAL DISPLAY**

**Thomas B. Harsch, Stow, Ohio, assignor to Hoffman-La Roche Inc., Nutley, N.J.**

**Filed May 14, 1973, Ser. No. 360,306**

**Int. Cl. G02f** *1/16*

**U.S. Cl. 350—160 LC** **6 Claims**




High efficiency reflection without ghosts or distracting background images is obtained in a liquid crystal display of the type having a twisted nematic structure. The display employs only a single polarizer on the front face of the display; while the rear surface is provided with a reflector assembly which will scatter and reflect polarized light without depolarizing the same. The reflector can comprise a transparent plate having a diffused surface facing the liquid crystal layer and a metalized reflecting backing on its opposite side. Alternately, the reflector assembly can comprise a metalized reflecting surface which is roughened to produce the required scattering effect.

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**3,837,730**

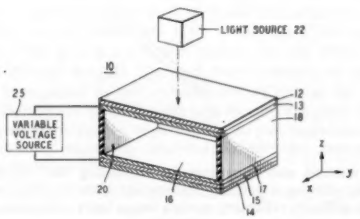
**MATRIX-ADDRESSED LIQUID CRYSTAL DISPLAY**

**Walter Bryan Hatfield, Fair Haven, and Donald Lawrence White, Bernardsville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.**

**Filed Nov. 28, 1973, Ser. No. 419,613**

**Int. Cl. G02f** *1/16*

**U.S. Cl. 350—160 LC** **4 Claims**



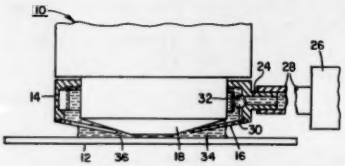

A row-by-row matrix-addressed display comprises a plurality of liquid crystal cells. Each cell includes a cholesteric-type liquid, with a pleochroic dye dissolved in the liquid crystal material. In operation, each cell has applied thereto either an energizing voltage or an above-zero holding voltage. When energized, a cell is transparent. In response to the holding voltage a cell is either transparent or colored and turbid depending, respectively, on whether or not an energizing voltage was last applied thereto. The clear state at the holding voltage is metastable and eventually decays to the colored turbid condition.

3,837,731

## OIL DISPENSER FOR MICROSCOPE OBJECTIVE

Lynn G. Amos, Raleigh, and Charles A. Howard, Apex, both of N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed June 22, 1973, Ser. No. 372,676
Int. Cl. G02b 3/12, 21/02
U.S. Cl. 350—179 9 Claims




A device for dispensing oil between the leading portion of a microscope objective and a microscope slide. The oil dispenser of the present invention includes an enclosure which is attached to the microscope objective such that the leading edge of the objective protrudes through a central aperture in the face plate of the enclosure. Oil is automatically fed from a suitable source to the enclosure through a check valve. The oil is caused to flow from the enclosure to the space between the microscope objective and a microscope slide so as to effect a full oil contact therebetween.

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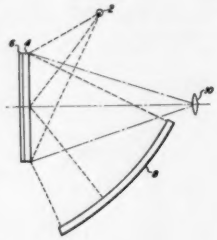
3,837,732

## PARTIALLY TRANSPARENT PLATES FOR INCREASED IMAGE CONTRAST

Goerge T. Bauer, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 666,213, Sept. 7, 1967, abandoned.
This application May 22, 1972, Ser. No. 255,496
Int. Cl. G02b 27/02
U.S. Cl. 350—235 8 Claims




A method and apparatus for increasing the contrast of images utilizing a partially transparent plate in close contact with a diffusely reflecting opaque image layer is disclosed.

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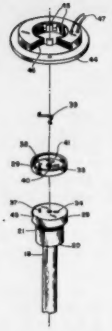
3,837,733

## SHIFTABLE SCANNER APERTURE

Clinton W. Shoch, Orlando, and George Lamar Harmon, Winter Park, both of Fla., assignors to Martin Marietta Corporation, New York, N.Y.

Continuation of Ser. No. 783,058, Dec. 11, 1968, abandoned.
This application Nov. 27, 1970, Ser. No. 90,781
Int. Cl. F41g 7/00; G02f 1/30
U.S. Cl. 350—272 12 Claims

This invention relates to a shiftable aperture arrangement for an optical area correlator, which device functions effectively to accomplish a switching between fields of view during range closure of a missile with respect to its target. It is desirable to launch a missile while viewing with small field of view optics, a comparatively small target area on the ground, and then at about 15 percent range closure, to switch so as to view with large field of view optics the same area. Rather than accomplishing field of view switching by using separate optical



elements and a combining glass and shutter arrangement, this invention provides the equivalent field of view switching by a simple mechanical repositioning of the area correlator scanning slit at the image plane so as on occasion to scan a larger area. The repositioning of the slit is accomplished in a very precise manner even though the speed of slit rotation may be high.

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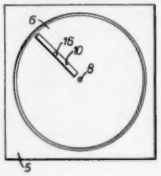
3,837,734

## METHOD OF AND APPARATUS FOR MEASURING VISUAL LATENCY

David Regan, Newcastle-under-Lyme, England, assignor to Wilkinson Sword Limited, London, England

Filed Feb. 1, 1973, Ser. No. 328,780
Claims priority, application Great Britain, Feb. 2, 1972, 4865/72
Int. Cl. A61b 3/02, 3/06
U.S. Cl. 351—17 22 Claims



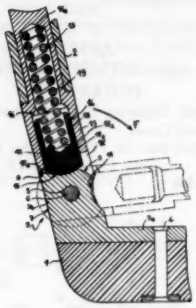

Visual latency in a human subject is tested by apparatus having a central light source serving as a fixation mark and a second light source movable radially and azimuthally relative thereto. For each position of the second source, the illumination level of the two sources is abruptly altered. The time lag between the instant when the illumination level of one source is altered and the instant when the illumination level of the other source is altered is adjusted until both are perceived by the subject to alter together. This process is repeated for each test. In a modification, both light sources are movable together to different radial and azimuthal positions relative to a fixation mark, and the same type of test is repeated but with polarizing filters over the two sources to ensure that each one is perceived by only one of the subject's eyes.

3,837,735

## IMPROVED SPRING LOADED SPECTACLE HINGE

Henri Guillet, 2 Boulevard Georges, Clemenceau Oyonnax, France

Filed Apr. 6, 1973, Ser. No. 348,693
Claims priority, application France, Apr. 6, 1972, 72.12698
Int. Cl. G02c 5/16, 5/22
U.S. Cl. 351—113 2 Claims



Eyeglass frame of which the bows can assume two distinct positions with respect to the front under the effect of a loaded part which cooperates with two notches in one of the parts of the hinge, characterized in that the loaded part, which is located in an axial housing of the bow has the form of a shoe of which the one end is convex and cooperates in a known manner with the part of the hinge having the notches, while the opposite end comes to rest against a shoulder located in the corresponding housing of the bow in order to limit the folding out of the bow towards the outside.

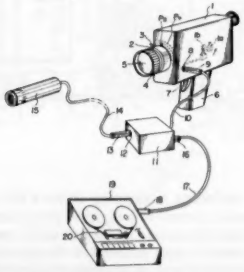
Part 3 of the hinge comprises two notches 10 and 11 separated by a cylindrical part 9. Bow 2 which is pivotably mounted with respect to face 1 is hollowed out by an axial bore 14 in which a shoe 17 is placed. If the bow is opened past its normal position, end 17*b* of the shoe comes to rest against the shoulder of bore 14. When the bow is released, spring 19 returns the bow to its use position by acting on 17.

3,837,736

## CAMERA AND MICROPHONE COMBINATION HAVING A VARIABLE DIRECTIONAL CHARACTERISTIC IN ACCORDANCE WITH A ZOOM LENS CONTROL

Mitsutoshi Ogiso, Kawasaki; Kazuya Hosoe; Kiyoshi Takahashi, both of Tokyo, and Takashi Itani, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1973, Ser. No. 392,427
Claims priority, application Japan, Aug. 29, 1972, 47/86498
Int. Cl. G03b 31/00
U.S. Cl. 352—12 10 Claims



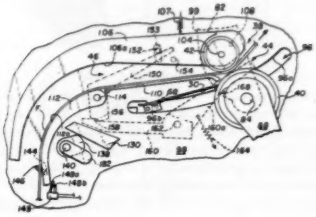
A simultaneous picture and sound recording system provides variation of the directional characteristic of a sound-receiving microphone in accordance with the zoom lens adjustment of a motion picture camera. The motion picture camera having a zoom lens is provided with a potentiometer which is interlocked with a zoom control ring capable, upon rotation, of moving the zoom lens assembly along the optical axis to derive a difference signal which is fed to an electric circuit device incorporated in the system. The electric circuit device is connected to a microphone having a variable directional characteristic so that the output signal from the device is directed to the input of the microphone. The combination makes it possible to increase the directional response characteristic of the microphone in the main direction, while adjusting the focal length of the motion picture camera from the wide angle setting to the telephoto setting.

3,837,737

## MOTION PICTURE PROJECTOR APPARATUS

William A. Martin, and John Q. St. Clair, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 77,959, Oct. 5, 1970,. This application Jan. 22, 1973, Ser. No. 325,288
Int. Cl. G03b 23/00
U.S. Cl. 352—124 5 Claims



Motion picture projector apparatus includes a hook-like member that is adapted to be moved into close proximity to a rotating roll of film or the like for engaging the film through an opening in a leading end portion of the film. The hook member then delivers the leading end portion of the film to self threading apparatus of the projector, and the hook is automatically disengaged from the film. The self threading apparatus comprises a pair of puck drive members which receive the film from the hook and drive it through a film guide toward a film gate at a rate that exceeds the rate film is advanced through the gate. The puck drive members are disengaged in response to the accumulation of film in the film guide. During rewind of film through the gate the puck drive members are disengaged to permit film to pass therebetween. The projector apparatus disclosed provides for review or manual rewind of film.

3,837,738

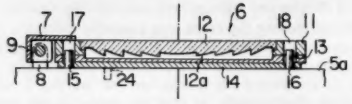
## AUDIO-VISUAL APPARATUS INCLUDING MAGNETIC SHEET MOUNTING AND HOLD-DOWN MEANS

Saburo Kato, c/o Kabushiki Kaisha Ricoh, 3-6, 1-Chome, Naka-magome, Ohta-Ku, Tokyo, and Saburo Hokari, 345, Futako, Kawasaki-Shi, Kanagawa-Ken, Japan

Division of Ser. No. 174,701, Aug. 25, 1971, Pat. No. 3,752,574. This application May 21, 1973, Ser. No. 362,406
Int. Cl. C03b 1/48
U.S. Cl. 353—23 2 Claims

The apparatus includes a magnetic sound reproducer having a record mounting surface adapted to support an audiovisual record sheet having a magnetic record surface facing downwardly, the sheet including a base formed with holes for correctly positioning the sheet on the support surface. A hold-

down means includes a frame mounted for pivoting toward the mounting surface and carrying a Fresnel lens having an irregu-



lar surface facing downwardly, the frame further carrying a transparent plate beneath the Fresnel lens and protecting the irregular surface thereof.

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**3,837,739**

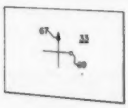
**LOW PROFILE EPISCOPIC PROJECTOR AND OPAQUE MATERIALS THEREFOR**

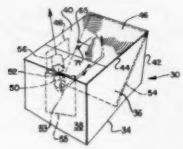
**Gerald Altman, 41 Westminster Rd., Newton, Mass. 02159**

**Continuation-in-part of Ser. No. 81,987, Oct. 19, 1970, Pat. No. 3,778,142. This application Feb. 5, 1973, Ser. No. 329,574**

**Int. Cl. G03b** *21/32, 21/06*

**U.S. Cl. 353—66** **9 Claims**





A large copy projector, in which the presence of elevated optics in front of the screen is avoided, uses opaque sheeting that is adapted to receive related graphic matter on its upper and lower faces. Simultaneously, the upper face is unobstructedly available for direct observation and manual access, and the lower face is unobtrusively available for image projection through a folded optical path below the opaque sheeting and a projection lens positioned elsewhere than directly over the copy. The copy is characterized by a lower specularly reflecting face that is accessible to the optical system from below but that can be marked from above by chemical etching from a user's pen or the like.

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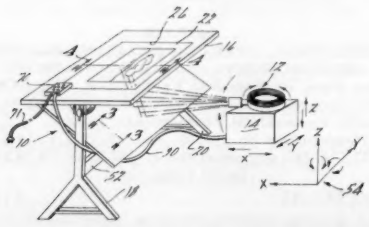
**3,837,740**

**PHOTO PROJECTION DRAWING BOARD**

**Daniel E. Johnson, 1711 Wisconsin, Marysville, Mich. 48040**

**Filed Jan. 20, 1972, Ser. No. 219,319**

**U.S. Cl. 353—122** **1 Claim**



An apparatus for displaying a photograph projected onto a work surface for purposes of reproduction, the apparatus comprising a mirrored surface for reflecting a photographic image from the projector to a transparent screen located in the top of a worktable, and including a remotely movable carriage supporting the projector and selectively locatable relative to the mirrored surface whereby the projected image may be selectively scaled and rectified on the screen. For remotely effecting movement of the projector carriage and/or the projector, a manually actuatable control box is located on or adjacent the work surface of the table in order to obviate the need for manual adjustment.

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**3,837,741**

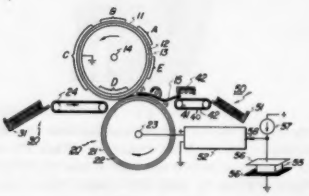
**CONTROL ARRANGEMENT FOR TRANSFER ROLL POWER SUPPLY**

**Paul R. Spencer, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Dec. 28, 1973, Ser. No. 429,249**

**Int. Cl. G03g** *15/16*

**U.S. Cl. 355—3 R** **8 Claims**



An arrangement for controlling the electrical bias applied to a bias transfer roller comprising a voltage source coupled to the transfer roller which is variable in response to a control signal, the control signal being generated by sensing the voltage across a sample of the roller material connected in series with a constant current source. Since the resistivity of the sample material varies with changes in humidity, the voltage and the control signal likewise vary with humidity to change the voltage applied to the transfer roller.

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**3,837,742**

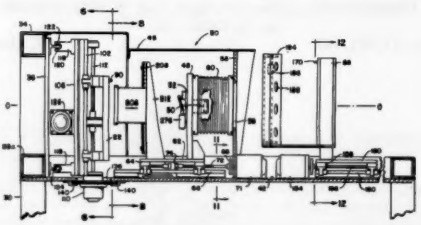
**PHOTOREPRODUCTION APPARATUS**

**Joseph H. Wally, Jr., Shawnee Mission, Kans., assignor to Filminiature Systems, Inc., Kansas City, Mo.**

**Filed Sept. 12, 1972, Ser. No. 288,265**

**Int. Cl. G03b** *27/44*

**U.S. Cl. 355—54** **23 Claims**



Apparatus including a stepping camera having a movable film platen under control of a digitally programmed indexer is disclosed for photographing images of sheet copy individually mounted in carriers and positioned by the camera subject holder on the optical axis of the objective, a different portion of the film being aligned with the camera objective for each carrier-mounted copy thus located by the subject holder caus-

ing images of the copies imposed on the film to be in a programmed sequence and arrangement, the film when processed being useful to make "imposition" printing plates in a companion projector.

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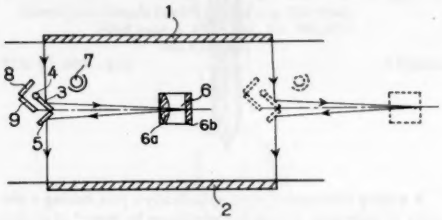
**3,837,743**

## DUPLICATION MAGNIFICATION VARIABLE DEVICE FOR USE IN A DUPLICATOR

**Kinya Amemiya, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan**

**Filed Dec. 7, 1972, Ser. No. 312,791**
**Claims priority, application Japan, Dec. 7, 1971, 46-98318**
**Int. Cl. G03b 27/32**
**U.S. Cl. 355—60** **7 Claims**




The device comprises a movable mirror which forms part of an optical system, light path changing mirrors adapted to integrate reflected light from the movable mirror, and a lens disposed in a light path and movable therealong. The movable mirror is turned upon switching the operation from non-magnified duplication to varied magnification duplication and vice versa. The lens is moved in conjunction with the motion of the mirror. Variable magnification copying is thereby effected.

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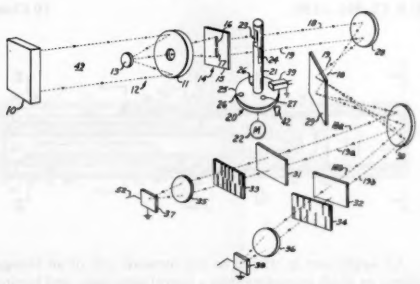
**3,837,744**

## SPECTROMETERS

**Dale W. Egan, Montrose; Geoffrey B. Holstrom, Los Angeles, and Harry C. Lord, Pasadena, all of Calif., assignors to Environmental Data Corporation, Monrovia, Calif.**

**Filed Sept. 17, 1969, Ser. No. 858,802**
**Int. Cl. G01j 3/42**
**U.S. Cl. 356—93** **15 Claims**



A spectrometer according to this disclosure includes optical means for receiving radiation from a region which may or may not contain particular materials to be monitored. Spectrum display means is provided for displaying the spectrum of received radiation. A first output means having first apertures is disposed to pass an image of absorption lines associated with the particular material being monitored, and second output means having second apertures is disposed to pass an image of continuum associated with the particular material.

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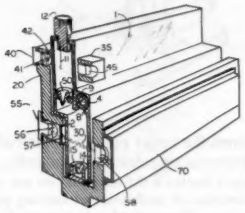
**3,837,745**

## APPARATUS FOR EVALUATION OF BIOLOGICAL FLUID

**Jesse L. Acker, Rockaway, N.J., and Peter M. Meserol, East Northport, N.Y., assignors to Akro-Medic Engineering Corp., Rockaway, N.J.**

**Filed Sept. 20, 1972, Ser. No. 290,654**
**Int. Cl. G01n 21/24**
**U.S. Cl. 356—201** **15 Claims**



The apparatus comprises a plurality of stationary cuvettes, a chamber for the fluid to be evaluated, means for placing the chamber in fluid communication with each of the cuvettes and for permitting the flow of fluid from the chamber into each of the cuvettes, a plurality of optical transmitting means in registration with each of the cuvettes for transmitting a beam of radiant energy through each of the cuvettes, and detector means for intercepting each of the beams of radiant energy and for measuring any optical changes in the radiant energy passing through the fluid in each of the cuvettes.

The chamber for the fluid, the plurality of cuvettes and the fluid communication means are all housed within, preferably, a disposable, self-contained cartridge of unitary construction. The cartridge is mountable within a carriage that houses the transmitting and detector means of the apparatus. The chamber which forms the upper portion of the cartridge can be prefilled with bacterial suspension. Periodically, during the growth of the subject bacteria the suspensions are agitated by suitable means. Samples of antibiotics of varying potency are placed in the cuvettes. The cartridge is mounted in the carriage. On a signal from the detector means a portion of the suspension passes into each of the cuvettes to begin the antibiotic titer which is evaluated by means of the transmitting and detector means and associated electronic circuitry.

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**3,837,746**

## APPARATUS FOR EVALUATION OF BIOLOGICAL FLUID

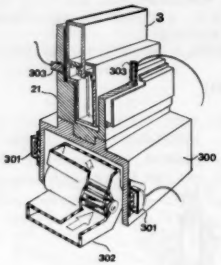
**Jesse L. Acker, Rockaway, N.J., and Peter M. Meserol, E. Northport, N.Y., assignors to Akro-Medic Engineering Corporation, Rockaway, N.J.**

**Continuation-in-part of Ser. No. 290,564, Sept. 20, 1972. This application Aug. 27, 1973, Ser. No. 392,107**
**Int. Cl. G01n 21/24**
**U.S. Cl. 356—201** **2 Claims**

The apparatus comprises a plurality of stationary cuvettes, a chamber for the fluid to be evaluated, means for placing the chamber in fluid communication with each of the cuvettes and for permitting the flow of fluid from the chamber into each of the cuvettes, a plurality of optical transmitting means in registration with each of the cuvettes for transmitting a beam of radiant energy through each of the cuvettes, and detector

means for intercepting each of the beams of radiant energy and for measuring any optical changes in the radiant energy passing through the fluid in each of the cuvettes.

The chamber for the fluid, the plurality of cuvettes and the fluid communication means are all housed within, preferably, a disposable, self-contained cartridge of unitary construction. The cartridge is mountable within a carriage that houses the transmitting and detector means of the apparatus. The




chamber which forms the upper portion of the cartridge can be prefilled with bacterial suspension. Periodically, during the growth of the subject bacteria the suspensions are agitated by suitable means. Samples of antibiotics of varying potency are placed in the cuvettes. The cartridge is mounted in the carriage. On a signal from the detector means a portion of the suspension passes into each of the cuvettes to begin the antibiotic titer which is evaluated by means of the transmitting and detector means and associated electronic circuitry.

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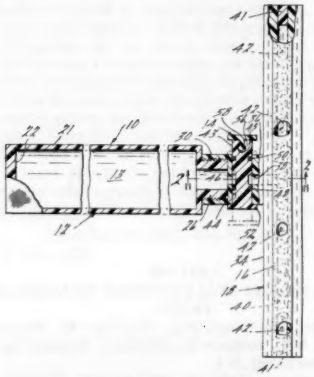
**3,837,747**
**WASHER/SQUEEGEE**
**Ulysee Seymore, 12248 Meyers Rd., Detroit, Mich. 48227**
**Filed Jan. 30, 1973, Ser. No. 327,996**
**Int. Cl. A47l** *1/08*
**U.S. Cl. 401—25** **5 Claims**



A self-contained, cleaning appliance is comprised of a tubular shaped handle forming a liquid reservoir and including an end portion detachably connected to a receptacle carrying washer and squeegee elements. The washer element is in selective fluid communication with the reservoir in response to selective positioning of a valve means operatively supported by the receptacle. In a preferred construction, the receptacle, handle, and valve means are fabricated from a plastic material.

**3,837,748**
**PEN**
**Minoru Wada, 209, 1520, Gojyonocho, Kashiharashi, Naraken, Japan**
**Filed Jan. 8, 1973, Ser. No. 321,711**
**Claims priority, application Japan, Mar. 21, 1972, 47-28400**
**Int. Cl. B43k** *27/14*
**U.S. Cl. 401—30** **7 Claims**

A writing instrument, more specifically a pen, having a plurality of individual writing tips which can be moved to project the tips one at a time from the instrument body. This may be accomplished while the writer maintains the same finger grip on the instrument as used when actually writing. The instrument comprises individual writing tips secured in individual movable carriers. At least one of the carriers forms a portion of the instrument outer surface in the area in which the instrument is grasped while writing and is slidably mounted thereon to permit movement of the particular tip secured therein to project it from the instrument body by sliding the carrier along the instrument body outer surface. Another carrier is mounted opposed to the slidably movable one and is coupled thereto by gear means for reciprocating movement. Means are also provided for securing all the writing tips in a retracted position within the instrument body.

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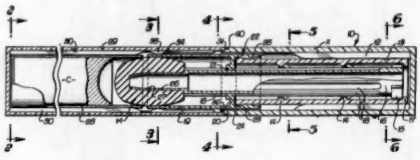
**3,837,749**
**COSMETIC APPLICATOR**
**Walter B. Spatz, Santa Monica, Calif., assignor to Spatz Corporation, Venice, Calif.**
**Continuation-in-part of Ser. No. 205,225, Dec. 6, 1971, Pat. No. 3,768,915. This application Mar. 12, 1973, Ser. No. 340,473**
**Int. Cl. A45d** *33/00*
**U.S. Cl. 401—130** **10 Claims**



An applicator is affixed to the forward end of an elongate driver or shaft extending into a barrel structure, and having a rear head meshing with internal threads in a female member of the barrel structure, the driver being splined to a forward sleeve adapted to surround the applicator and being swivelly connected to the female member. A removable cap containing a cosmetic mass has its rear portion surrounding the sleeve and rotatable on the barrel structure, the cap frictionally en-

gaging the external portion of the sleeve to provide a slippable clutch therewith capable of transmitting a predetermined torque before slipping, whereby relative rotation in one direction between the barrel structure, on the one hand, and the cap, sleeve and driver, on the other hand, produces forward feeding of the applicator toward and against the cosmetic mass, continued relative rotation and application of torque causing the clutch to slip, while effecting relative rotary movement between the applicator and cosmetic mass to coat the applicator with a portion of the mass. Removal of the cap exposes the coated applicator for use.

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**3,837,750**

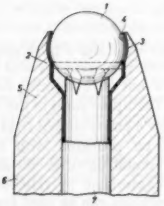
**SOCKET STRUCTURE FOR THE BALL OF A BALL POINT PEN REFILL**

**Heinz Gunther Herrnring, Alveslohe, Germany, assignor to Montblanc-Simplo GmbH, Hamburg, Germany**

**Filed June 4, 1973, Ser. No. 366,855**

**Int. Cl. B43k** *7/10*

**U.S. Cl. 401—216** **4 Claims**



A socket structure for a ball point refill, which comprises a ball made of corundum and arranged inside an outer supporting shell provided in its interior with a compound bearing consisting of a backing shell having a hardness exceeding 800 kg/sq.mm Vickers and an inner lining facing the ball and having a hardness of less than 200 kg/sq.mm Vickers.

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**3,837,751**

**FOUNTAIN BRUSH**

**John M. Ross, 3660 Monroe, Dearborn, Mich. 48124**

**Filed Feb. 26, 1973, Ser. No. 335,677**

**Int. Cl. A46b** *3/00, 11/02*

**U.S. Cl. 401—290** **1 Claim**

An improved fountain brush including a squeezable bottle, with a rigid closure member and a wire frame brush with its ends received in bores formed in the closure member, improvements consisting of providing said bores with brushing like inserts, the inserts having locking or retaining elements on the inside faces, arranged to prevent the inadvertent displacement of the wire ends from the bores, but permit the removal and replacement of the brush by predetermined force.

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**3,837,752**

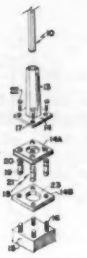
**COUPLING FOR BREAK AWAY POLE BASES**

**John Shewchuk, 645 Grierson Ave., Winnipeg, Manitoba, Canada**

**Filed Jan. 26, 1973, Ser. No. 326,580**

**Int. Cl. F16b** *31/00*

**U.S. Cl. 403—2** **2 Claims**



A pole has a base and is secured to an anchor block and spaced above same by a plurality of couplers which are frangible if the force of impact upon the pole exceeds forces such as wind force, normally encountered. Normally such impact forces would be those encountered when a vehicle strikes the pole and the coupler should fracture at a force less than that which is considered critical to the occupants. However, the principle can be utilized under other circumstances if desired.

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**3,837,753**

**LONGITUDINALLY ADJUSTABLE GUIDE ROD**

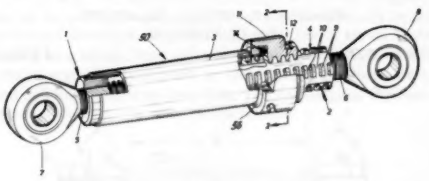
**Helmut Weiste, Bad Sassendorf-Steningsen, and Ferdinand Schumacher, Coesterweg 42, Soest 477, both of Germany**

**Filed Feb. 14, 1973, Ser. No. 332,493**

**Claims priority, application Germany, Mar. 30, 1972, 7212144**

**Int. Cl. F16b** *7/14*

**U.S. Cl. 403—33** **8 Claims**



A guide rod particularly for connecting parts of agricultural implements comprises first and second telescopically interengageable rod portions each having an outer end with an eyelet or similar means for securing it to an implement part and each having an inner end which is interengaged with the respective inner end of the other rod portion. One of the rod portions carries a rotatable lock nut which has a plurality of circumferentially extending and circumferentially spaced and axially extending rows of projecting cams which engage in recesses between the cams of similar rows arranged on the other rod portion. The parts are locked together when the pro-

jecting cams of the nut engaged behind the cams of the other rod portion and spring biasing means is provided to urge the nut into a locking position. The parts may be disengaged by rotating the lock nut against the biasing spring to release them.

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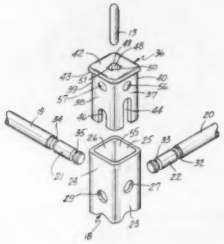
**3,837,754**

## CORNER SUPPORT STRUCTURE AND CAP MEMBER UTILIZED IN CONNECTION WITH SAME

**Frank J. Malcik, Berwyn, Ill., assignor to Swingline Inc., Long Island City, N.Y.**

**Filed June 21, 1971, Ser. No. 155,164**
**Int. Cl. F16b** *7/04*
**U.S. Cl. 403—217** **5 Claims**



A corner support structure is shown which includes a hollow upstanding post which is provided with a plurality of angularly disposed lateral openings therewithin, one above another. Within each of the openings the end portion of an outwardly extending member is disposed. A cap is disposed within the post and overlies the outwardly extending members. The cap has securing means therewithin to hold the extending members in position. The cap is preferably made of a machineable resilient plastic material and has an outwardly laterally extending top portion and an open bottom. The cap is provided with a downwardly depending opening within the top portion and also has a plurality of downwardly depending peripheral spaced openings adjacent the first-named downwardly depending opening.

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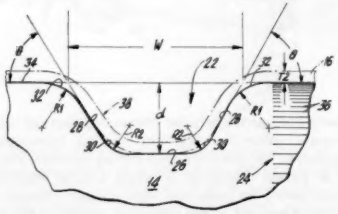
**3,837,755**

## MULTI-PIECE ROD FOR CONTROL AND STRUCTURAL MEMBERS

**Robert L. Benoit, Franklin Square; Winslow W. Peters, Lindenhurst, and Joseph Morgan, Babylon, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.**

**Filed Oct. 17, 1973, Ser. No. 407,178**
**Int. Cl. F16b** *7/00*
**U.S. Cl. 403—274** **4 Claims**



A multi-piece rod employing a thin central tubular member in combination with end members. The end members are provided with circumferential grooves and advantageously a knurled section. The circumferential grooves have a critical diameter and configuration for receiving the tubular member to effect attachment therebetween.

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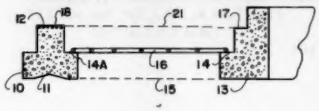
**3,837,756**

## PRECAST OR EXTRUDED CENTRAL DIVIDERS FOR HIGH CHAIRS AND CURBS FOR ROAD CONSTRUCTION

**Alfred Schwarz, 12½-578 Agnes St., Winnipeg, Manitoba, Canada**

**Filed Jan. 30, 1973, Ser. No. 328,143**
**Claims priority, application Great Britain, Feb. 16, 1972, 7142/72**
**Int. Cl. E01c** *11/18*
**U.S. Cl. 404—70** **5 Claims**



A central divider strip and a curb section are laid upon a prepared surface and are provided with outwardly extending ledges to support a mat of reinforcing steel spaced above the prepared surface. The upper sides of the divider strip and curb act as guide rails for a conventional road laying machine. The divider strip can be provided with reflective beads, luminescent dye or metal particles throughout the mix. The beads define the center line by reflecting the headlights of vehicles and the particles can be used for the detection of the center lines by electronic detection devices in the vehicle.

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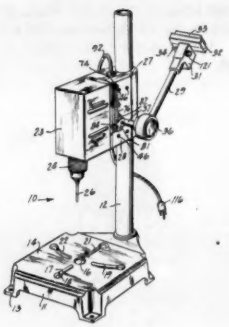
**3,837,757**

## DRILL PRESS

**Aaron J. Levine, 3147 North Cambridge Ave., Chicago, Ill. 60657**

**Filed May 29, 1973, Ser. No. 364,933**
**Int. Cl. B23b** *39/12, 47/00, 49/00*
**U.S. Cl. 408—14** **6 Claims**



A drill press which comprises a stand with an upright and a movable drill controllable by a handle including a switch which allows the drill to be run at variable speeds as well as to be reversed and in which the stand is provided with a pair of arcuate slots aligned with the drill so that the drill will not hit into the drill stand and provided with adjustable limits for controlling the upper and lower limits of the drill movement as well as adjusting means for moving the entire drill assembly relative to the upright of the stand.

3,837,758

## MEANS FOR DAMPING VIBRATIONS OF TOOLS IN DRILLING MACHINES OR THE LIKE

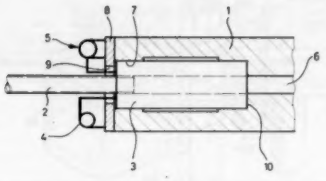
**Peter Streicher, Gebersheim, Germany, assignor to Tiefbohr-Technik GmbH & Co., Dettingen, Germany**

**Filed Aug. 23, 1972, Ser. No. 283,232**

**Claims priority, application Germany, Aug. 25, 1971, 2142549**

**Int. Cl. B23b** *47/02*

**U.S. Cl. 408—143** **25 Claims**




A drilling machine wherein two parts which are rotatable relative to each other are connected by an elastic coupling which serves to reduce or eliminate vibrations, especially torsional oscillations, of the tool during removal of material from a stationary or rotary workpiece. The coupling may be installed between two parts of the supporting structure for workpieces, between two parts of the tool, between two parts of the tool supporting structure, or between the tool and its supporting structure. The coupling may consist of one or more elastic elements and one or more damping elements, such as eddy current brakes.

3,837,759

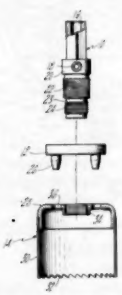
## HOLE SAW AND QUICK DISCONNECT DRIVE THEREFOR

**Joseph E. Bittern, Weatogue, Conn., assignor to Capewell Manufacturing Company, Hartford, Conn.**

**Filed July 12, 1972, Ser. No. 271,040**

**Int. Cl. B23b** *51/04*

**U.S. Cl. 408—204** **8 Claims**



A hole saw equipped with a quick disconnect drive arbor which comprises a drive shaft having a pair of axially spaced threaded sections of opposite thread direction adjacent one end of the shaft. One of the threaded sections has a substantially higher helix angle than the other threaded section with an included angle between the helices being self-releasing, or non-locking, say, about 15° or more. A quick disconnect drive ring is mounted on the higher pitch thread and is provided with a pair of depending aligning and drive pins. The hole saw is threadably mounted on the other threaded section and is provided with a pair of radially spaced apertures which cooperate with the aligning and drive pins of the drive ring. The rotation of the drive ring and hole saw in unison relative to the drive shaft causes the bottoming of the drive ring on the saw with the pins in the apertures to provide a drive connection for transmitting rotary torque therebetween. Reverse rotation of the drive ring and saw in unison relative to the drive shaft coupled with the self-releasing angle between the two threaded sections provides for the quick disconnect of the saw from the arbor.

3,837,760

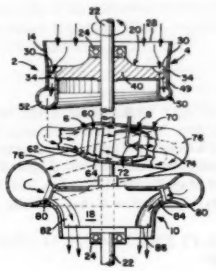
## TURBINE ENGINE

**Edward A. Stalker, Bay City, Mich., assignor to The Stalker Corporation, Essexville, Mich.**

**Filed July 13, 1972, Ser. No. 271,274**

**Int. Cl. F04d** *21/00, 29/44*

**U.S. Cl. 415—181** **2 Claims**




A turbine type engine employs an axial type compressor in which the rotor has flow passages between the blades of decreasing cross-sectional area from inlet to outlet while the blades are configured to turn the flow of fluid substantially back toward its original direction, so that the supersonic flow is discharged at a relatively flat angle to the plane of rotation of 30° or less. The direction of discharge flow of the compressor has its greatest component of velocity substantially in the peripheral direction. A collector is used free of stator vanes leading to a tubular type diffuser. The diffuser is formed with tubular segments positioned in successive downstream relation defining peripheral flow slots. The discharge of the combustor is directed to a radial inflow turbine.

3,837,761

## GUIDE VANES FOR SUPERSONIC TURBINE BLADES

**Robert O. Brown, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Division of Ser. No. 173,486, Aug. 20, 1971, Pat. No. 3,751,182. This application Feb. 14, 1973, Ser. No. 332,458**

**Int. Cl. F01d** *5/22*

**U.S. Cl. 416—191** **3 Claims**

Guide vanes are installed between blades of the last stage of blading of a large steam turbine to form converging-diverging

openings to minimize losses in this portion of the turbine. The guide vanes are fastened to adjacent blades through a shroud

ring and through a lashing ring to connect the blades in such a manner as to reduce vibration and allow thermal expansion of the rotor.

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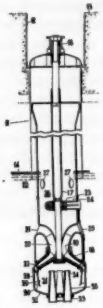
**3,837,762**
**PUMPS**

**Alan Stuart Lee, Leicester, England, assignor to The English Electric Company Limited, London, England**

**Filed May 30, 1973, Ser. No. 365,163**
**Claims priority, application Great Britain, May 31, 1972, 25426/72**
**Int. Cl. F04d** *29/44, 29/54, 15/02*
**U.S. Cl. 415—207** **5 Claims**

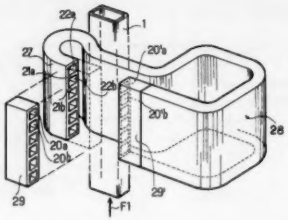


A pump assembly having a chamber into which a pump is arranged to discharge, and a plurality of outlet pipes each having one end extending into the chamber, the wall of each outlet pipe at said one end being of streamline form, and the part of each pipe extending away from said one end being in the form of a diffuser of gradually increasing internal cross-sectional area with increasing distance from the said one end.

**3,837,763**
**LIQUID METAL CONDUCTION PUMP**

**Andre Ertaud, Paris; Jacques Panossian, Chaville, and Henri Carbonnel, Antony, all of France, assignors to Groupement Atomique Alsacienne Atlantique, Le Plessis-Robinson, France**

**Filed Dec. 22, 1972, Ser. No. 317,842**
**Claims priority, application France, Dec. 22, 1971, 71/46211**
**Int. Cl. H02n** *4/20*
**U.S. Cl. 417—50** **10 Claims**



A conduction pump having a simple structure for liquid metal, comprising a coil constituted by a refractory casing containing liquid metal and a metal flow duct connnected to the casing by two end pieces each comprising at least one opening.

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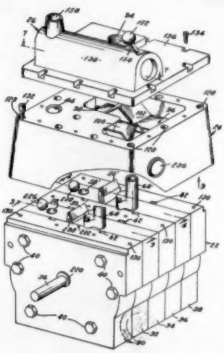
**3,837,764**
**MULTI-STAGE ROTARY VACUUM PUMP WITH SEPARATE OIL RESERVOIR**

**Junior L. Fritch, Edgerton, and Don R. Brandeberry, Montpelier, both of Ohio, assignors to Robinair Manufacturing Corporation, Montpelier, Ohio**

**Continuation of Ser. No. 252,213, May 11, 1972, Pat. No. 3,791,780. This application Nov. 12, 1973, Ser. No. 414,695**
**Int. Cl. F04b** *23/04;* **F01c** *11/00;* **F04c** *23/00*
**U.S. Cl. 417—62** **3 Claims**



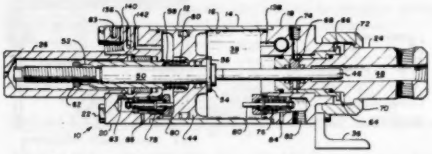
An improved vacuum pump of the rotary mechanical type having interchangeable component parts which may be assembled in "building block" fashion to provide single and multistage pumps built up from the same basic parts. The multistage pump may be provided with a switchable feature whereby the stages may be operated in series or in parallel, with automatic switching therebetween if desired. Both air ballast and oil injection are provided, the latter incorporating a check valve to control the supply of oil to the pumping chamber.

**3,837,765**

## PUMP

**Irvin B. Weise, Bellaire, and Ernest H. Purfurst, Houston, both of Tex., assignors to Anderson, Greenwood & Co., Houston, Tex.**

**Continuation of Ser. No. 132,353, April 8, 1971. This application Aug. 6, 1973, Ser. No. 385,885**
**Int. Cl. F04b** *35/02*
**U.S. Cl. 417—399** **13 Claims**



A pump having a lost motion connection between the power piston and the pumping piston so that the stroke of the pumping piston may be varied without changing the stroke of the power piston, a restriction in the outlet from at least one end of the power cylinder to control the rate of movement of the power piston, and a control valve as a subcombination having relationships between the valve member and ports defined to prevent stopping of the pump in a mid position. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

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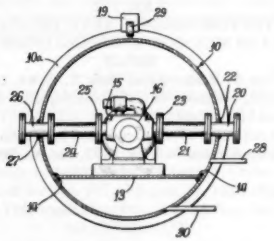
**3,837,766**

## PUMPING DEVICE FOR LIQUIDS

**Jerry J. Cook, 1010 Darlington Ln., Crystal Lake, Ill. 60014**

**Filed Sept. 4, 1973, Ser. No. 393,956**
**Int. Cl. F04b** *17/00, 35/04*
**U.S. Cl. 417—414** **3 Claims**



A liquid pump is housed within a sealed tank. The tank is internally charged with an inert gas and maintained at a pressure exceeding the pressure of the liquid developed by the pump.

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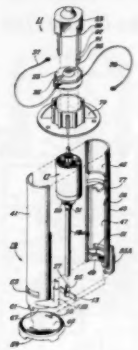
**3,837,767**

## SMALL PUMP

**T. Dwight Aller, Dallas, Tex., assignor to Hydrometals, Inc., Dallas, Tex.**

**Filed May 31, 1973, Ser. No. 365,568**
**Int. Cl. F04b** *17/00*
**U.S. Cl. 417—424** **11 Claims**

Improvement in a small pump having the usual impeller, shaft, motor and housing characterized by a plurality of elongate housing sections that conformingly fit together laterally in an assembled condition to form the housing. The improved pump has a clamp ring serving as a portion of a means for joining and holding the housing sections together in the assembled condition; and a shroud for covering the motor for protection against droplets of spray. Also disclosed are specific structural features; such as, leg portions on the shroud for immobilizing the motor against movement longitudinally of the housing,



flared end walls of the housing sections for effecting better clamping action, use of an adhesive means for joining edges of the housing sections together, and a separable base and impeller to facilitate assembly.

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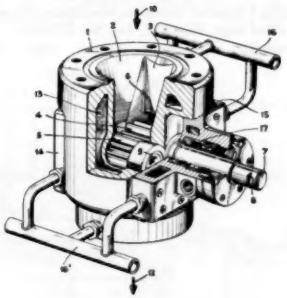
**3,837,768**

## GEAR PUMP FOR HIGHLY VISCOUS MEDIA

**Fritz Haupt, Regensdorf, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland**

**Filed Aug. 31, 1973, Ser. No. 393,395**
**Int. Cl. F01c** *1/24*
**U.S. Cl. 418—206** **5 Claims**



A gear pump for highly viscous media includes a housing having an inlet passage at one end and a discharge passage at the opposite end and a pair of pump gears are rotatably supported within the housing and have intermeshing teeth. The inlet passage comprises an inwardly converging cone havng an angle aperture of 36° to 60° and leads centrally to the space overlying the meshing gears. On a side of the inlet passage which overlies the side of one of the gears, there is provided an additional rectangular opening or recess having a cross-section with a width substantially equal to the width of one of the gears and a length corresponding substantially to the double outside diameter of each gear wheel minus a tooth height.

3,837,769

## APPARATUS FOR THE MANUFACTURE OF MOLDED ARTICLES OF FOAM-FORMING THERMOPLASTIC SYNTHETICS

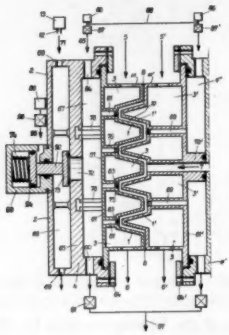
Hans Erlenbach, 5429 Lautert, Rhein-Lahn-Kreis, Germany

Filed Nov. 20, 1972, Ser. No. 307,847

Claims priority, application Germany, July 29, 1972, 2237397

Int. Cl. B29d 27/04

U.S. Cl. 425—4 R 26 Claims



Apparatus for molding articles of foam forming thermoplastic synthetics wherein the mold assembly has separate and independently controlled systems respectively for heating and cooling the mold walls and for injecting steam during the foam forming operation, and in one embodiment the same heat transfer liquid is selectively circulated through heating and cooling devices in the system for heating and cooling the mold walls, including preheating of the mold walls prior to introduction of the plastic in a variation of this embodiment.

3,837,770

## VULCANIZING PRESS INTENDED FOR CURING RADIAL TIRES BY MEANS OF A BLADDER OF TOROIDAL SHAPE

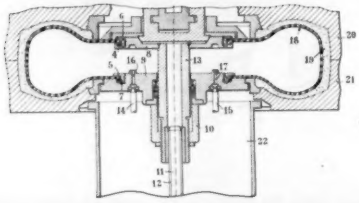
Georges Gazuit, Chemin Chauveau, Montlucon, France

Filed Sept. 28, 1972, Ser. No. 293,089

Claims priority, application France, Sept. 28, 1971, 71.34816

Int. Cl. B29h 5/02

U.S. Cl. 425—33 5 Claims



This bladder is a piece of rubber or other air-impervious plastic material which is adapted to be introduced into the crude tires fitted in vulcanizing presses to constitute the internal element of the mould in which the tire is to be cured.

This bladder is of substantially toroidal configuration, has a constant thickness and dimensions approaching very closely the internal dimensions of the crude tire to be cured, and comprises two beads of same diameter and same axial direction.

This bladder is intended more particularly for use in presses designed for vulcanizing radial ply tires.

3,837,771

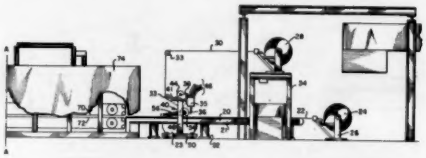
## APPARATUS FOR PRODUCING FOAMED RESIN-CARE WEB-FACED LAMINATES IN CONTINUOUS LENGTHS

Richard A. Kolakowski, Northford, Conn.; Robin L. Grieve, Delfzijl, Netherlands, and Peter J. Tilgner, Akron, Ohio, assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 17, 1972, Ser. No. 307,441

Int. Cl. B29d 27/04

U.S. Cl. 425—110 7 Claims



Apparatus is disclosed for continuously producing foamed resin-core web-faced laminates useful as insulating and construction panels or the like, in which provision is made to simplify and improve adaptation of the apparatus for more practical, commercial production of panels of widely varying thickness specifications, while maintaining uniformity of foam density and cell size regardless of panel thickness. Self-foaming resin mix is applied to a pair of continuously advancing facing webs and allowed to expand between them to form the laminate or foam board. Provision is made for changing the point of lay-down of the resin mix on the facing web in relation to the point of entry of the webs to a curing zone. Where the resin is applied in the form of a liquid stream, provision is made for adjusting the position of a nip roll relative to the curing zone entrance and/or point of lay down, the facing webs being passed through an adjustably restricted gap formed by the nip roll after the lay-down of resin mix to effect more even distribution and adherence of the resin to the webs. A modification is also disclosed employing spray application of the resin. The disclosure also covers the method of continuously producing foam board using the apparatus.

3,837,772

## APPARATUS FOR MOLDING ARTICLES CONTAINING INSERTS AND MEANS FOR FEEDING INSERTS TO THE MOLD

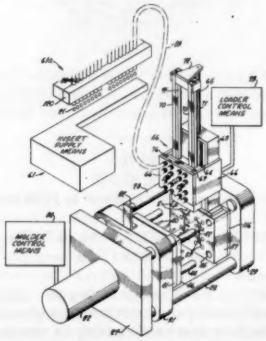
Roger D. Van de Walker, and Blair E. Howe, both of Costa Mesa, Calif., assignors to California Injection Molding Co., Inc., Costa Mesa, Calif.

Division of Ser. No. 79,191, Oct. 8, 1970, Pat. No. 3,719,396.

This application Nov. 24, 1972, Ser. No. 309,202

Int. Cl. B29c 1/06

U.S. Cl. 425—126 16 Claims




Apparatus for mass-manufacturing elongated hollow plastic objects, such as covers for electronic thermometer probes,

and ball point pens, having inserts at the ends thereof. The inserts are automatically loaded, by vibrating the same into pockets and then lifting them out of the pockets into suction tubes which pass through a horizontal transfer plate into nests in a vertical transfer plate. Vacuum is employed to maintain the inserts in the nests during movement of the vertical transfer plate to positions adjacent the distal ends of hollow core pins through which air is sucked. The vacuum in the vertical transfer plate is then converted to pressure to cause the inserts to fly across the air gaps to the core pin ends, following which the inserts are maintained on such ends by suction. The mold is then closed to cause the inserts to engage spring-biased plungers, following which the plastic is injected.

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**3,837,773**

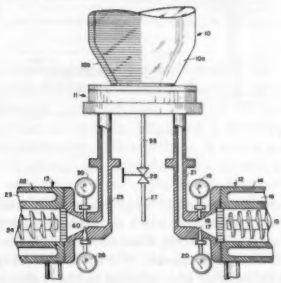
## EXTRUDED PLASTIC FILM METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF

**Garland E. Raley, Morris Plains, N.Y., assignor to Ethyl Corporation, Richmond, Va.**

**Division of Ser. No. 508,424, Nov. 18, 1965, abandoned. This application Mar. 27, 1969, Ser. No. 834,920**

**Int. Cl. B29d** *23/04*; **B29f** *3/12*

**U.S. Cl. 425—131** **1 Claim**



This invention relates to extruding thermoplastic materials. More particularly, the invention relates to a new extruded seamless lay-flat blown tubing, to an apparatus and a method for the manufacture thereof.

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**3,837,774**

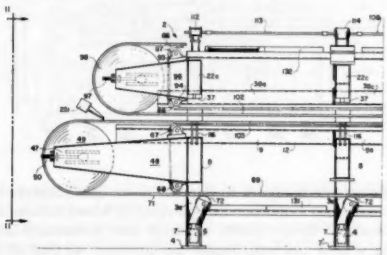
## APPARATUS FOR MOLDING RIGID PRODUCT FROM SYNTHETIC RESINOUS MATERIAL

**Lee F. Ross, Los Gatos; James E. Wilkinson; Fred A. Craig, both of San Jose, and Allan M. Hudson, Mountain View, all of Calif., assignors to Thiokol Corporation, Bristol, Pa.**

**Division of Ser. No. 107,174, Jan. 18, 1971, Pat. No. 3,736,089. This application Dec. 1, 1972, Ser. No. 311,088**

**Int. Cl. B29c** *3/06*

**U.S. Cl. 425—144** **6 Claims**



A machine operable to produce molded synthetic products in finished form in a continuous process, including mixing, pouring, molding, and curing the resultant product.

**3,837,775**

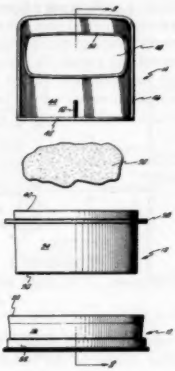
## COMBINED FOOD STORAGE CONTAINER AND MOLD THEREFOR

**Richard A. Boucher, Northboro, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.**

**Filed Aug. 16, 1973, Ser. No. 388,850**

**Int. Cl. A23p** *1/00*

**U.S. Cl. 425—195** **3 Claims**



A modular food storage container and a mold and press used in conjunction therewith enables the production of a molded foodstuff within the container and out of contact with the sidewall areas thereof. The container is further adapted for interengagement with like containers to produce an integral sealed stack of such containers each containing the foodstuff described.

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**3,837,776**

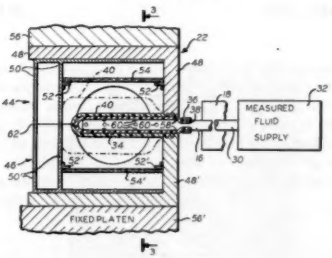
## PRODUCT COOLING FOR BLOW MOLDING

**John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Dunellen, N.J.**

**Filed July 6, 1973, Ser. No. 377,052**

**Int. Cl. B29d** *23/03*

**U.S. Cl. 425—242 B** **14 Claims**




A blow molding machine for making plastic articles has the plastic blown to the desired shape without requiring a blow mold cavity. A plastic coating is applied to a core rod which is covered by an expandible balloon, in deflated condition, hugging the core rod. The extent of expansion of the blown article is regulated by metering the amount of fluid used for blowing; and more accurate control can be obtained by using a liquid for blowing. A stream of air against the outside of the plastic cools the article. By making the wall of the balloon thicker at localized areas the expansion and consequent shape of the article can be controlled. If wide flat bottoms are desired, a baffle can be used for regulating the lengthwise expansion of the balloon and blown article.

3,837,777

## PLASTIC MATERIAL INJECTION MOULDING MACHINE

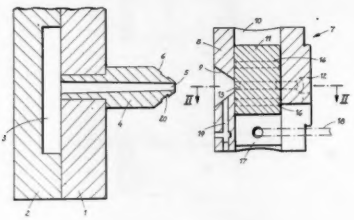
Werner Hunten, Stein bei Nurnberg; Erich Untheim, Kalchreuth uber Nurnberg, and Dieter Popp, Nurnberg, all of Germany, assignors to Demag Kunststofftechnik GmbH, Bavaria, Germany

Filed July 12, 1972, Ser. No. 270,887

Claims priority, application Germany, July 16, 1971, 2135792

Int. Cl. B29f 1/03

U.S. Cl. 425—247 13 Claims



A plastics material injection moulding machine in which the free end of a sprue runner of the mould is engageable in a complementary shaped orifice of an injection nozzle; the point of separation between the sprue runner of the mould and the injection nozzle being situated at or in the immediate vicinity of a valve of the injection nozzle. The valve comprises an axially displaceable valve body which has at least one annular groove having two interruptions therein. One of the interruptions is located between two openings from injection units and the other is located in the vicinity of the injection nozzle whereby the flows of plastics materials from the injection units are maintained separated until they enter the sprue runner.

3,837,778

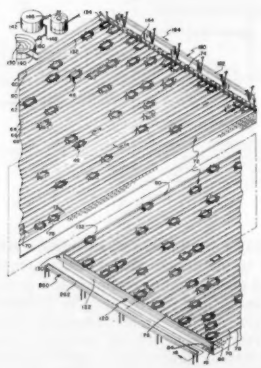
## APPARATUS FOR PACKAGE MOLDING, ROOFING ASPHALT

Reid T. Parker, 1347 S. Washington, Wichita, Kans. 67211

Filed Dec. 22, 1972, Ser. No. 317,533

Int. Cl. B29c 5/00

U.S. Cl. 425—256 20 Claims



Roofing asphalt packaged in a film of polyester resin and the packaging method wherein hot asphalt is poured into a mold or boat that is lined by the polyester film at a charging station, such boat being floated on a stream of cooling water that carries the boat and its cooling contents to a discharge station whereat the cooled asphalt enveloped in the resin film is removed from the boat as the packaged product with the boat being returned to the charging station for reuse.

3,837,779

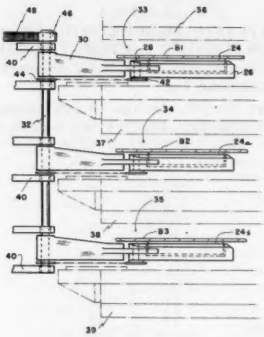
## BELT CARRIER DEVICE FOR PRESSES

David Weinschenk George, New Castle, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Sept. 4, 1973, Ser. No. 394,434

Int. Cl. B29d 29/00; B29h 7/22; B30b 15/00

U.S. Cl. 425—28 B 7 Claims



The disclosure pertains to a roller assembly which is movable from a position outside a belt press to a position within the press to support a belt being threaded through the press when the platens thereof are opened. The roller assembly comprises a cantilever collapsible arm secured to the frame of the press, the arm being extended and collapsed in a very small radius by a sprocket rack and piion power system.

3,837,780

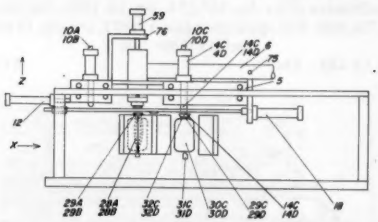
## BLOW MOLDING MACHINE

Paul G. Strong, 6530 Kenwater Ave., Canoga Park, Calif. 91304

Division of Ser. No. 211,904, Dec. 27, 1971, abandoned. This application May 25, 1973, Ser. No. 363,828

Int. Cl. B29c 17/07

U.S. Cl. 425—297 9 Claims



This invention relates to improvements in machinery and the process for manufacturing all types of blown hollow articles made of thermoplastic materials and particularly those having a neck opening. Means are provided so that after a mold at a first station has closed around a parison and the parison has been severed by the knife, the extruder and knife assembly is caused to move to a second mold station and in so doing they move with them a neck forming pin which is inserted into a neck section of the hollow article.

3,837,781

## DEVICE FOR COOLING AND GRANULATING STRANDS OF PLASTIC MATERIAL DISCHARGED FROM AN EXTRUDER

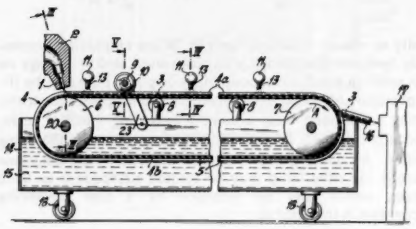
Friedrich Lambertus, Stuttgart, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany

Filed Nov. 24, 1972, Ser. No. 309,167

Claims priority, application Germany, Dec. 9, 1971, 2161067

Int. Cl. B29f *3/08*

U.S. Cl. 425—308 9 Claims



There is disclosed a device for cooling and granulating strands of synthetic plastic material as they are continuously extruded through the discharge head of an extruder. The device comprises an extruder head with a plurality of side-by-side disposed discharge openings through which a corresponding number of strands are extruded. The strands are fed upon the pulling portion of a conveyor band disposed below the discharge head. The band has on its surface facing the discharge head a plurality of lengthwise grooves for receiving therein and holding spaced apart the strands fed upon it. The initially hot strands are cooled by directing a flow of coolant thereupon as they are carried along by the conveyor. A granulating device at the end of the pulling portion cuts the now cooled strands into pieces of selected length. The idling portion of the conveyor is subjected to cooling action so that is is reasonably cooled before it again becomes the pulling portion of the conveyor.

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3,837,782

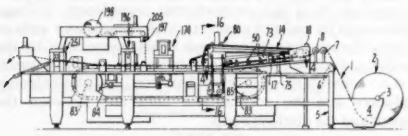
## APPARATUS FOR FORMING CONTAINERS

Konrad E. Meissner, Lafayette; William A. Lane, Danville, and Edwin J. Pelster, Pleasanton, all of Calif., assignors to Filper Corporation, San Ramon, Calif.

Division of Ser. No. 208,178, Dec. 15, 1971, Pat. No. 3,766,702. This application July 5, 1973, Ser. No. 376,679

Int. Cl. B29c *3/02*

U.S. Cl. 425—347 7 Claims



A packaging machine for individual portions in which a strip of thermoplastic film is automatically releasably gripped along its longitudinally extending marginal portions by rows of gripping elements and while so gripped, the film is moved in a forward direction and is progressively heated by a heater and progressively tautened transversely of its movement as it softens. After leaving the heater and while still gripped, the softened film is positioned over upper mold forms at a cup-forming station at one end of the upper run of an endless row of such forms which upper run is moved in said forward direction toward a filling and sealing station successively spaced from said one end. A lower mold form at said cup-forming station is moved against the upper mold form to form the cup-mold and mechanical and suction means forms a plurality of cups in the film after which the marginal grippers and the lower mold form automatically release the film for movement to the filling station where the cups in the film are filled, and the filled cups are then moved to the sealing station while the cups are still in the upper mold forms. At the sealing station a cover sheet is positioned over the cups and is heat sealed to the upper surface of the film around the cup openings during uniform application of pressure against the upper and lower sides of the film at said surface, and finally the film and filled, sealed cups therein are moved out of the upper mold forms and the cups are cut from the film to provide filled and sealed individual packages.

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3,837,783

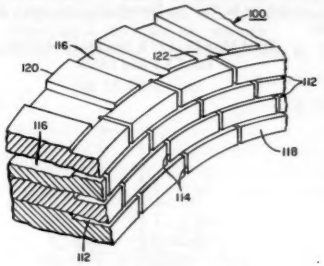
## EXTRUSION DIE

Rodney D. Bagley, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 295,813, Oct. 10, 1972, Pat. No. 3,803,951. This application Nov. 14, 1973, Ser. No. 415,679

Int. Cl. B28b *21/52*; B29c *23/00*

U.S. Cl. 425—464 3 Claims




A die for extruding a matrix with essentially circumferential walls is formed by helically winding a slotted and grooved strip of material about a central hub, and bonding or otherwise joining the thus-wound strip material together as an integral body. The strip material is provided with a longitudinal groove and a plurality of transverse slots communicating with such groove which combine to form discharge outlets for extruding thin-walled, small cell sized matrices.

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3,837,784

## METHOD FOR OPERATING MODULATED BURNERS ACTUATED BY AN EMULSION

Claude Delatronchette, Cachan, France, assignor to Elf-Union, Paris, France

Filed May 14, 1973, Ser. No. 359,871

Claims priority, application France, May 16, 1972, 72.17500

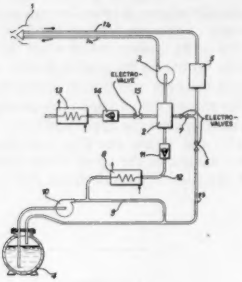
Int. Cl. F23j *7/00*

U.S. Cl. 431—4 4 Claims

A method for operating modulated burners actuated by an emulsion and using a pre-stream exclusively formed of fuel be-

fore the re-ignition of the burner **1**, said method comprising:

establishing the return of said pre-stream generated by a high pressure pump, through the medium of a modulated regulator **5** and of a first electro-valve **6**;



establishing a flow of liquid fuel and water emulsion to the burner, by opening a second electro-valve **7**;

interrupting said pre-stream by closing said first electro-valve **6**, and igniting the burner **1** before it has been reached by the emulsion.

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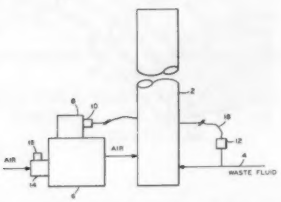
**3,837,785**

**APPARATUS FOR DELIVERING WASTE FLUIDS FOR COMBUSTION**

**Robert W. Evans, and David M. Simmons, Jr., both of Sweeny, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.**

**Filed May 29, 1973, Ser. No. 364,919**
**Int. Cl. F23d** *13/20*

**U.S. Cl. 431—5** **8 Claims**



An apparatus and method for passing waste fluids into a flare stack for combustion, passing air substantially continuously into said stack while passing waste fluids thereinto, and controllably passing additional air into the flare stack in response to the flow rate of waste fluids into said stack.

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**3,837,786**

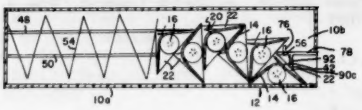
**PHOTOFLASH ASSEMBLY WITH SERIALLY ADVANCING LAMPS AND EJECTOR**

**Thomas B. McDonough, Allenwood, and John W. Shaffer, Williamsport, both of Pa., assignors to GTE Sylvania Incorporated, Danvers, Mass.**

**Filed Nov. 21, 1973, Ser. No. 417,960**
**Int. Cl. F21k** *5/02*

**U.S. Cl. 431—93** **22 Claims**

A photoflash magazine comprising a plurality of flashlamps and associated reflectors movably supported within a closed container having a front face window located at a remote firing position in the container. Each lamp-reflector combination is mounted on a respective triangular-shaped pallet slidably retained in a channel. The plurality of pallets are alternately oriented along a two-track portion of the channel to minimize space requirements, and the pallets are urged toward the firing position by loading spring. A releasable latch engages the pallet located at the firing position and is operable for momentarily releasing the pallets to permt indexing thereof until the latch engages the next pallet. A cammed portion of the channel orients each pallet moving into the firing position so that the reflector and lamp on that pallet are operatively aligned with the front face window, and the firing position and window are offset from the camera lens sufficiently to reduce "red-eye" effect. When employing percussively ignitable flashlamps with associated striker springs on each pallet, a mechanical coupling is disposed between the firing position and an access aperture in the magazine for transmitting an impulse from a camera actuating member to individually release a striker spring to fire a lamp at the firing position. An opening is provided in the side of the magazine whereby the used lamp may be ejected subsequent to latch release, which may be actuated by a film advancing mechanism in the camera.



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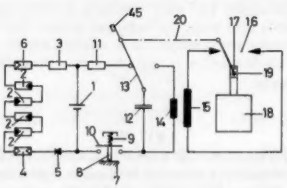
**3,837,787**

**LIGHTERS**

**Hermann Remy, Dietzenbach-Steinberg, and Adolf Lamprechet, Hausen, both of Germany, assignors to Rowenta-Werke GmbH, Haussen, Germany**

**Filed July 20, 1972, Ser. No. 273,400**
**Claims priority, application Germany, July 24, 1971, 2137163; Germany, July 1, 1972, 2232491**
**Int. Cl. F23q** *2/28*

**U.S. Cl. 431—255** **43 Claims**



An electrically ignited gas lighter with photoelectric transducers as the prime electrical energy source. Power from the photoelectric transducers is stored in accumulator cells and selectively metered through charging of a capacitor to a spark ignition circuit operable by discharge of the capacitor across a spark gap. An alternative embodiment has direct charging of the capacitor from the photoelectric transducers. Voltage multiplication by parallel connection of accumulator cells to the photoelectric transducers and series connection to the capacitor is disclosed, also by means of step-up transformers and d.c. converters connected between the photoelectric transducers and the accumulator cells and between the capacitor and the discharge gap.

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**3,837,788**

**REDUCTION OF GASEOUS POLLUTANTS IN COMBUSTION FUEL GAS**

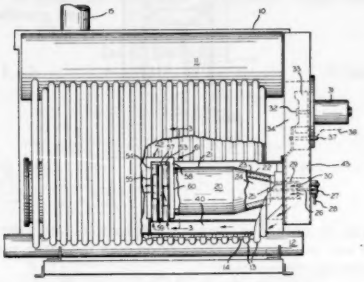
**Glenn D. Craig, Menomonee Falls; David T. Feuling, Milwaukee, both of Wis., and Paul G. LaHaye, Cape Elizabeth, Maine, assignors to Aqua-Chem, Inc., Milwaukee, Wis.**

**Filed Oct. 5, 1972, Ser. No. 295,249**
**Int. Cl. F23l** *9/00*

**U.S. Cl. 431—351** **18 Claims**

Fuel is burned in a primary combustion chamber with less than the air required for stoichiometric combustion so that the

combustion gases have a high carbon monoxide (CO) and a hydrocarbon content and the temperature of the gases is held below that at which significant nitrogen oxides ($NO_x$) would be produced. The combustion gases are then passed through a secondary combustion zone in which more air is injected into



the gas stream to oxidize the CO and hydrocarbons to carbon dioxide ($CO_2$). The secondary burner comprises a plurality of foraminous tubes through which secondary air is emitted. Combustion in the secondary zone is maintained at a temperature below that at which nitrogen oxides ($NO_x$) will be produced in significant quantities.

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**3,837,789**

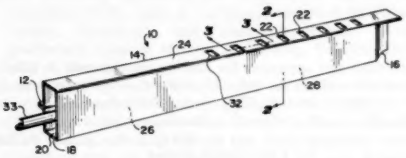
**GAS BURNER**

**Herbert Schindler, Tarzana, and Willard O. Ware, Stockton, both of Calif., assignors to M.M.S. Limited, Alameda, Calif. and Automation International, Inc.**

**Filed Jan. 8, 1973, Ser. No. 322,072**

**Int. Cl. F23d** *13/40*

**U.S. Cl. 431—354** **14 Claims**



A gas burner formed as a hollow elongate tube having an entrance and a closed end, the tube having an upper wall and a plurality of spaced openings formed along a length of said upper wall, an inwardly depending baffle portion adjacent each opening, each baffle portion having a length substantially equal to one dimension of the adjacent opening.

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**3,837,790**

**METHOD AND APPARATUS FOR HEATING METALLIC STRIP**

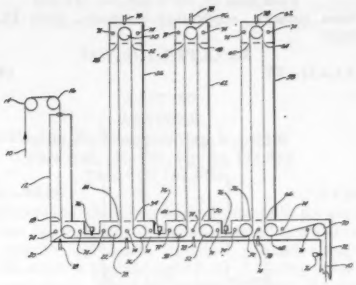
**Marvin B. Pierson, Franklin, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio**

**Filed Dec. 29, 1972, Ser. No. 319,281**

**Int. Cl. F27b** *9/28*

**U.S. Cl. 432—8** **7 Claims**

A method and apparatus for continually heating a metallic strip in a furnace having one or more sections through which the strip passes in a vertical path of travel, and having turnaround rolls and roll chambers baffled from the furnace atmosphere between adjacent vertical sections. Independent heating means are disposed adjacent the surface of each roll



and individually controlled so as to maintain the temperature of at least the surface of each roll at substantially the temperature of the strip passing thereabout.

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**3,837,791**

**APPARATUS AND PROCESS FOR PREHEATING SCRAP IRON**

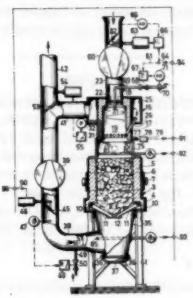
**Hans Schoch, Thalwil, and Josef Herzog, Winterthur, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur and Hayek Engineering Ltd., Zurich, both of, Switzerland**

**Filed July 6, 1973, Ser. No. 376,943**

**Claims priority, application Switzerland, July 6, 1972, 10124/72**

**Int. Cl. F27b** *1/26*

**U.S. Cl. 432—21** **6 Claims**



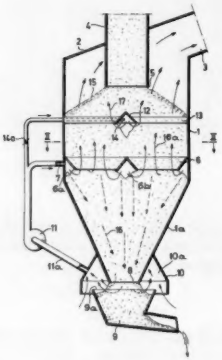
Preheating is carried out in two time-stages. During the first stage, the burner performance is initially at a maximum and when the temperature below the charged basket reaches a certain temperature, e.g., 110°C to 160°C, the performance drops to between 60 percent to 90 percent. During this time, the temperature at the top of the basket is regulated at a maximum, e.g. 1,000°C, by adjusting the quantity of re-circulated air.

During the second stage-which beings when the temperature below the basket reaches 500°C – the quantity of recirculated gas is increased to the maximum and the burner performance regulated to maintain the temperature of 500°C below the basket. Should the burner operation fall below 30 percent, the temperature above the basket is again regulated by the quantity of re-circulated air and the temperature below by burner regulation.

## 3,837,792
## COOLING DEVICE FOR KILN MATERIAL

**Herbert Deussner, Bensberg, Germany, assignor to Klockner-Humboldt-Deutz AG**

**Filed June 19, 1973, Ser. No. 371,495**
**Claims priority, application Germany, June 19, 1972, 2229810**
**Int. Cl. F27b 1/16, 7/38**
**U.S. Cl. 432—77** **18 Claims**



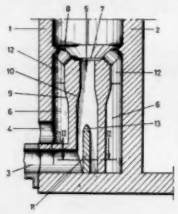
A structure for cooling particulate hot kiln material by contact with cooling air including a cooling chamber having an upper receiving end with a lower discharge end and a rotary gas fired kiln discharging into the upper end through a feed conduit extending into the upper end of the chamber, an upper downwardly facing air distribution device, a lower downwardly facing air distribution device having radially extending spokes and an outer portion lying adjacent the wall of the cooling chamber, and opening at the lower end discharging into the hopper with an air intake chamber arranged so that air flows over the exposed surface of the material into an intake blower connected to the air distribution devices.

## 3,837,793
## CERAMIC BURNER FOR USE IN AN AIR-PREHEATER OR HOT BLAST STOVE FOR A BLAST FURNACE PLANT

**Wouter Bram Lucieer, Amsterdam, and Theodorus Antonius Maria Van Amerongen, Bennebroek, both of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens En Staal-Fabrieken N.V., Ijmuiden, Netherlands**

**Continuation of Ser. No. 141,855, May 10, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,666**
**Int. Cl. F23l 9/04**
**U.S. Cl. 432—217** **4 Claims**

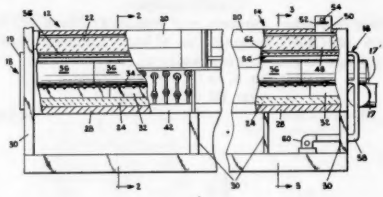
A ceramic burner for the air preheater of a blast furnace plant is provided with a vertical core in at least the lower part of the fuel passage, which defines with the walls of the fuel passage a substantially slot-like and continuous passage around the core. The arrangement promotes uniformity of gas flow and uniformity of combustion over the entire surface of the slot-like burner head.



## 3,837,794
## BILLET HEATING

**William A. Phillips, Comstock Park, Mich., assignor to Granco Equipment, Inc., Grand Rapids, Mich.**

**Filed July 16, 1973, Ser. No. 379,266**
**Int. Cl. F27b 9/00**
**U.S. Cl. 432—8** **17 Claims**



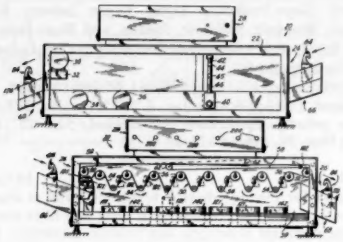
A method and apparatus for heating articles such as billets wherein the articles are passed serially through a preheating zone and into a fired discharge zone of a furnace. A burning combustible mixture of gases is directed against the articles in the fired discharge zone and the hot gases are passed to the preheating zone for heat exchange with the articles therein. The heated gases are turbulated by blowing cooler air through holes in pipes positioned along the length of the preheat chamber. Desirably, the pipes extend into the fire discharge zone to further turbulate the gases therein.

# CHEMICAL

## 3,837,795
## METHOD AND APPARATUS FOR STAINING SLIDES

**Stanley A. Becker, Stroudsburg; William B. Fizette, Henryville, both of Pa., and Richard T. Wood, Staten Island, N.Y., assignors to Biomatics Instrument Corporation, Stroudsburg, Pa.**

**Filed Nov. 5, 1971, Ser. No. 195,911**
**Int. Cl. D06p** *3/00*
**U.S. Cl. 8—3** **8 Claims**



A method for staining biological material on flat slides is disclosed. A group of slides is successively dipped in vessels containing different liquids conventionally used in staining. All the slides in the group are held in vertical parallel relationship while the slides are in the successive vessels. The time a group of slides is in any given vessel is controlled in accordance with the staining technique desired. One of the vessels has a de-colorizing agent in it. In at least this vessel a laminar flow of de-colorizing liquid is directed over the flat faces of the slides to create a chimney effect that minimizes cross-contamination. The de-colorizing liquid is withdrawn continuously from its vessel, filtered and re-introduced into the vessel.

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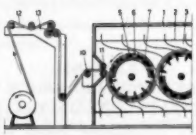
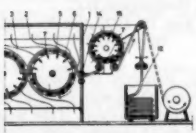
## 3,837,796
## PROCESS AND APPARATUS FOR FIXING SYNTHETIC FIBROUS MATERIALS AND DYESTUFFS

**Heinz Fleissner, Egelsbach, and Hans-Ulrich von der Eltzi, Frankfurt-Main, both of Germany, assignors to Fleissner GmbH, Egelsbach and Farbwerke-Hoechst Aktiengesellschaft vormals Meister & Bruning, Frankfurt/Main, both of, Germany**

**Continuation of Ser. No. 596,321, Nov. 22, 1966, abandoned. This application June 8, 1970, Ser. No. 48,805**
**Claims priority, application Germany, Nov. 29, 1965, 50923; May 11, 1966, 49170**
**Int. Cl. D06p** *3/82*
**U.S. Cl. 8—21 R** **9 Claims**





The damage to the selvage of a textile fabric and distortion of this fabric when subjected to a thermosetting or thermosoling process is avoided by passing hot air or other inert gas onto and through the fabric while it is supported on a perforated drum which is covered with a fine meshed sieve fabric.

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## 3,837,797
## LEATHER

**Alfred R. Conklin, Rt. 4, Harrodsburg, Ky. 40330**

**Filed Aug. 13, 1971, Ser. No. 171,752**
**Int. Cl. C14c** *3/04*
**U.S. Cl. 8—94.26** **6 Claims**

An improved iron tanned leather is produced by the use of a novel acidic aqueous solution containing ferric iron and citric acid as essential ingredients. Optionally, glycerine may be added. This solution is used substantially according to known tanning procedures. The novel leather obtained is characterized by a pleasing light-fast, tan color, a shrink temperature which compares favorably with that required of the more expensive chrome tanning and stability of aging. On ashing at 1,000°C. in air the leather leaves an 8 to 17 percent by weight residue which is at least 90 percent ferric oxide.

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## 3,837,798
## POLYESTER MODIFICATION WITH AN OXIDIZING CHEMICAL

**Robert E. Yelin, Willingboro, N.J.; James E. Hendrix, New Orleans, La., and Ralph F. Villiers, Mexico, Mexico, assignors to FMC Corporation, New York, N.Y.**

**Filed Dec. 15, 1971, Ser. No. 208,386**
**Int. Cl. D06m** *5/06*; **D06p** *3/52*
**U.S. Cl. 8—115.5** **4 Claims**

This invention provides a process for treating polyester materials employing an aqueous treatment solution containing an oxidizing chemical whereby the cotton-like hand of the polyester is improved and the polyester is made cationically dyeable.

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## 3,837,799
## PROCESS FOR CREASEPROOFING CELLULOSIC FIBER-CONTAINING FABRIC USING FORMALDEHYDE VAPOR AND A SOLID AND A SOLID CATALYST

**Katherine W. Wilson, Newport Beach; Ronald Swidler, Pasadena, and Jose P. Gamarra, Santa Ana, all of Calif., assignors to Cotton, Incorporated, New York, N.Y.**

**Continuation of Ser. No. 762,135, Sept. 24, 1968, abandoned. This application May 26, 1971, Ser. No. 147,201**
**Int. Cl. D06m** *13/14*, *13/54*
**U.S. Cl. 8—115.6** **11 Claims**

Cellulosic materials such as cotton fabrics or garments are made crease resistant by exposing them to formaldehyde vapor at an elevated temperature after pre-impregnation of fabric with a formaldehyde-free aqueous solution of a latent catalyst, preferably zinc chloride.

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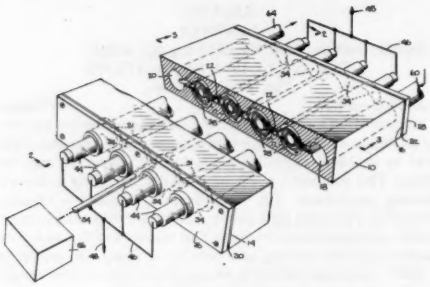
## 3,837,800
## METHOD AND APPARATUS FOR PURIFYING FLUIDS

**M. Dale Wood, Hasbrouck Heights, N.J., assignor to Harold Meltzer, Jersey City, N.J., a part interest**

**Continuation-in-part of Ser. No. 140,919, May 6, 1971,. This application Jan. 11, 1973, Ser. No. 322,688**
**Int. Cl. A61l** *1/00*
**U.S. Cl. 21—54 R** **8 Claims**

A method and apparatus for continuously purifying a fluid by the emission of ultraviolet rays characterized by a body with a series of spaced, parallel, elongated, cylindrical radia-

tion chambers extending therethrough, and a plurality of elongated, interconnecting chambers having a height substantially less than the diameter of the radiation chambers, a plurality of elongated, ultraviolet ray emitting lamps removably mounted in jackets in the radiation chambers, respectively, and extending from the front to the rear of the radiation chambers. Fluid to be purified is continuously received in an elongated chamber and spread into sheet-like flow attitude and thence



passed serially and transversely between the lamp jackets and the walls of the radiation chambers, the walls being in close proximity to the jackets to maintain sheet-like flow for a substantial distance around the periphery of the lamps, and the fluid is maintained in sheet-like flow between adjacent radiation chambers by passing through the interconnecting chambers, and thence the purified liquid is discharged from the last of the radiation chambers.

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**3,837,801**

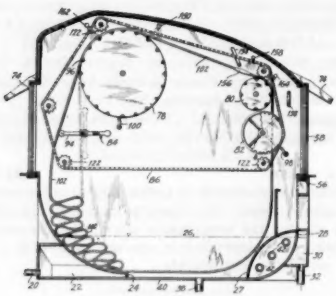
**METHOD AND APPARATUS FOR PROCESSING FABRICS IN ROPE-LIKE FORM**

**Dan Ben Shmuel, Johnsville, N.Y., assignor to Woodside Construction Corp., Johnsville, N.Y.**

**Filed Mar. 21, 1972, Ser. No. 236,662**

**Int. Cl. B05c** *3/134*

**U.S. Cl. 8—151.1** **12 Claims**



An apparatus and method for processing a fabric in a vat, which vat is at least partially filled with a processing liquid. The fabric is in rope-like form and has a leading and a trailing end. Means is provided for forming vertically pleated adjacent piles of the fabric at the back of the vat wherein the fabric at the top of each pile is in the same vertical plane as the fabric at the bottom of the same pile. Means is provided for winding the fabric into helical convolutions, each of which contains one such pile, wherein the fabric unwinds at the trailing end and rewinds at the leading end as successive convolutions advance in a direction toward the trailing end of the fabric and for intermittently moving the convolutions in a direction perpendicular to the vertically pleated piles of fabric. The vat has a doubly insulated frame to reduce radiation loss therefrom so that the temperature in the vat above the surface of the processing liquid is approximately equal to the temperature in the vat below the surface of the processing liquid whereby chilling of the fabric is avoided after the fabric has been pulled through and lifted above the surface of the processing liquid.

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**3,837,802**

**PROCESS FOR DYEING**

**Alfred Litzler, Itingen; Hans Wilhelm Liechti, Oberwill; Jean-Frederic Guye-Vuilleme, Aigle; Eugen Johann Koller, Oberwil; Branimir Milicevic, Riehen, and Hans-Joerg Angliker, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland**

**Continuation of Ser. No. 808,661, March 19, 1969, abandoned. This application Jan. 4, 1972, Ser. No. 215,403**

**Claims priority, application Switzerland, Jan. 27, 1969, 1200/69; Mar. 28, 1968, 4626/68**

**Int. Cl. D06p** *1/38*

**U.S. Cl. 8—173** **10 Claims**

A process for dyeing wherein textile material is dyed or printed with a solution containing at least one fiber-reactive dyestuff in a solvent.

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**3,837,803**

**ORTHOPHOSPHATE CORROSION INHIBITORS AND THEIR USE**

**David A. Carter, Warminster; Chester A. Bishof, North Hills, and Frederick G. Vogt, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.**

**Filed July 11, 1972, Ser. No. 270,782**

**Int. Cl. C23f** *11/00*

**U.S. Cl. 21—2.7** **28 Claims**

The present disclosure is directed to the inhibition of the corrosion of metallic parts in contact with aqueous systems. This effect is accomplished by the addition to the system of a corrosion inhibiting concentration of a water-soluble organophosphonic acid compound having a carbon to phosphorus bond in combination with a water-soluble orthophosphate. The aqueous system should contain solubilized calcium salts and should possess a basic pH. Under certain conditions it is desirable to utilize water-soluble metal cations as a adjunct to the treatment.

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**ERRATUM**

For Class 21—54 see:
Patent No. 3,837,800

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**3,837,804**

**PROCESS FOR DEACIDIFYING A BOOK WHICH HAS A PYROXYLIN-CONTAINING COVER**

**Bernard F. Walker, Richmond, and James E. Kusterer, Jr., Montpelier, both of Va., assignors to Council on Library Resources, Inc., Washington, D.C.**

**Filed Aug. 15, 1973, Ser. No. 388,472**

**Int. Cl. A61l** *13/00*

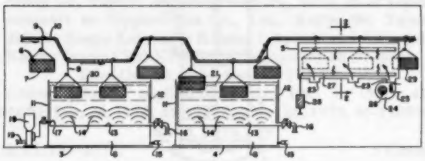
**U.S. Cl. 21—58** **11 Claims**

Books having pyroxylin-containing covers can be deacidified by impregnation with morpholine vapors without substantially damaging the covers, if the impregnation is conducted for about 5 to 15 minutes with a gaseous atmosphere consisting essentially of about 30 to 55 weight percent morpholine and a balance of water vapor at a temperature of about 90° to 115° F.

## 3,837,805
## APPARATUS FOR CONTINUOUS STERILIZATION AT LOW TEMPERATURE

**Raymond M. G. Boucher, New York, N.Y., assignor to Wave Energy Systems Inc., New York, N.Y.**

**Division of Ser. No. 106,739, Jan. 15, 1971, Pat. No. 3,708,263. This application Sept. 27, 1972, Ser. No. 292,615**
**Int. Cl. A61l** *13/00, 1/00, 3/00*
**U.S. Cl. 21—102 A** **20 Claims**



An automatic method and apparatus to continuously surface sterilize at temperatures below 75° C any objects, parts or components made of metal or heat sensitive materials. Said method consists of treating materials first in a synergistically active chemical solution in an ultrasonic tank, then of rinsing in a second ultrasonic tank. The final step consists of drying the processed material in a sterile atmosphere. The three different processing steps taken place in a matter of minutes inside a laminar flow positive pressure clean or white room. The apparatus continuously delivers sterile parts or instruments ready for packaging and sealing. Sterilized parts or instruments are not physically or chemically affected by the process and do not contain dissolved corrosive or toxic compounds.

## 3,837,806
## METHOD OF ANALYZING COATINGS ON PARTICULATE MATERIAL

**James R. Ritter, Ridgewood, and Otto R. Strauch, Wyckoff, both of N.J., assignors to Potters Industries Inc., Carlstadt, N.J.**

**Filed Sept. 5, 1972, Ser. No. 286,060**
**Int. Cl. G01n** *31/22;* **B44d** *1/44;* **C03d** *17/28*
**U.S. Cl. 23—230 R** **13 Claims**

A method of analyzing molecular layers of an amino silane coupling agent on glass spheres, in which a saturated solution of 1-chloro-2,4 dinitrobenzene in methyl alcohol is added to a sample of the spheres without substantial agitation, and the materials are then heated to a temperature sufficient to react the 1-chloro-2,4 dinitrobenzene with the coupling agent. The yellow color of the reaction product is compared with successive color standards representative of known thicknesses of the silane layers to determine the thickness of the layers on the spheres being analyzed.

## 3,837,807
## IMPROVED ABSORBENT FOR CARBON-14 DIOXIDE

**Viekko Tarkkanen, Breda, Netherlands, assignor to Packard Instrument Company, Inc., Downers Grove, Ill.**

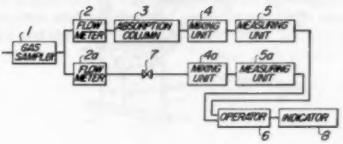
**Filed Apr. 7, 1972, Ser. No. 242,243**
**Int. Cl. G01n** *31/06, 31/12;* **G01t** *1/10*
**U.S. Cl. 23—232 R** **7 Claims**

In the absorption of carbon-14 dioxide gas in a liquid alkaline absorbent preparatory to liquid scintillation counting of the carbon-14 in a scintillation mixture including an aromatic hydrocarbon, the absorbent is a primary alkoxy alkylamine. Enhanced solubility of the carbon-14 dioxide-alkoxy alkylamine carbamate permits the scintillation mixture to be prepared without the hitherto indispensable use of an alcohol, which had caused undesirable chemical quench effects.

## 3,837,808
## METHOD OF ANALYZING OXYGEN

**Toshio Sugimoto, Nagoya; Toru Uema, Kasugai, and Isamu Takeuchi, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan**

**Filed Feb. 22, 1973, Ser. No. 334,714**
**Claims priority, application Japan, Feb. 25, 1972, 47-19936; Dec. 29, 1972, 47-2478**
**Int. Cl. G01n** *27/26*
**U.S. Cl. 23—232 E** **22 Claims**




A method of analyzing oxygen capable of measuring the concentration of oxygen in a sample gas with accuracy and a minimum fluctuation with time, even when said sample gas contains combustible gases together with oxygen, which comprises:

dividing the sample gas into two parts;

removing oxygen from the one part of the two divided sample gas;

adding a predetermined amount of oxygen of a known concentration to the one part of the sample gas from which oxygen has been removed and another part of the sample gas, respectively;

converting the oxygen concentration in each part of the sample gas thus treated into electromotive force electrochemically by means of an oxygen concentration cell comprising a solid electrolyte; and

determining and indicating the difference between said respective electromotive forces.

## 3,837,809
## STERILIZING PROCEDURES

**Arthur William Chapman, 53 Ranmoor Cres., Sheffield, England**

**Filed Nov. 29, 1972, Ser. No. 310,542**
**Int. Cl. G01n** *31/22*
**U.S. Cl. 22—253 TP** **8 Claims**

Indicator means for showing that a surgical material or appliance has been sterilized by steam and formaldehyde vapour, the indicator means comprising a carrier for a sulphite to react with the formaldehyde to produce an alkali, and an indicator for the alkali having a change point on the alkaline side of neutrality.

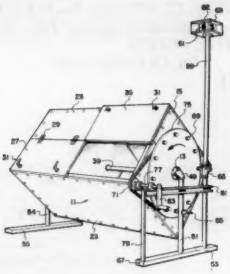
## 3,837,810
## COMPOSTER

**Albert Z. Richards, 2022 S. 1635, E., Salt Lake City, Utah 84103, and Lynn S. Madsen, 2747 Sherwood Dr., Salt Lake City, Utah 84108**

**Filed Aug. 9, 1972, Ser. No. 279,094**
**Int. Cl. C05f** *9/02*
**U.S. Cl. 23—259.1** **5 Claims**

A rectangular or square container, made of a heat insulating material such as wood, for converting organic wastes into compost is mounted for rotation about a supported perforated pipe extending axially through the container. A water-holding manifold is connected via a conduit to the perforated pipe. Water vapor is carried from the manifold by means of air which is introduced into the manifold through a vertical, up-

standing pipe. The wet air passes through the perforated pipe and into the container, providing adequate moisture and air



for the composting operation. A mechanism is also provided to selectively rotate the container and to hold it at a preselected angular position.

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**3,837,811**

**CRYSTALLIZATION APPARATUS**

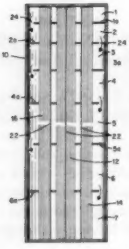
**George Windal, Roubaix, France, assignor to Fives Lille-Cail, Paris, France**

**Filed Sept. 28, 1972, Ser. No. 292,858**

**Claims priority, application France, Sept. 29, 1971, 71.34999**

**Int. Cl. B01d** *9/02*

**U.S. Cl. 23—273 R** **7 Claims**



A crystallization apparatus with a horizontal tank subdivided into a plurality of intercommunicating compartments has a plurality of walls parallel to the longitudinal axis of the tank arranged in each compartment to form therein two cells laterally adjacent the tank walls and at least one central cell. The neighboring cells in each compartment also communicate with each other, as does each cell laterally adjacent the tank walls with a like cell upstream or downstream, the ports in the dividing walls being so arranged that the product in the tank circulates therethrough in a sinuous path. Radiators are positioned in the lower part of the tank and pass through all compartments, the radiators being divided into several sections each positioned in one of the cells and forming in each cell a return passage for the product under the radiators.

**3,837,812**

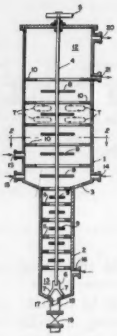
**ROTATING DISC CONTACTOR**

**Jan Th. Boontje, Santpoort, Netherlands, assignor to Verenigde Kunstmestfabrieken Mekog-Albatros N.V., Utrecht, Netherlands**

**Continuation-in-part of Ser. No. 889,097, Dec. 30, 1969,. This application Apr. 25, 1972, Ser. No. 247,416**

**Int. Cl. B01d** *9/02, 11/02*

**U.S. Cl. 23—273 R** **10 Claims**



A rotating disc contactor comprising two cylindrical shells of different diameter in open connection to each other, the wider one situated on top of the narrower one and both provided with annular stationary baffles and disc-like rotor baffles, each of which rotor baffles being located between two annular stationary baffles and mounted on a shaft. The apparatus is useful for carrying out chemical reaction between substances dissolved in liquids resulting in solid precipitates (for instance, chemical reactions between ions resulting in crystalline precipitates) and washing the precipitates. Whereas the reaction and the crystallization are caused to take place within the wider shell, the coarser particles of the product are allowed to sink through an upward current of washing liquid in the narrower shell.

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**3,837,813**

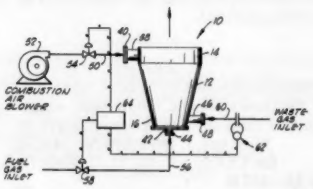
**WASTE GAS INCINERATOR**

**Harold O. Ebeling, and Russell D. Smith, both of Houston, Tex., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.**

**Filed Feb. 1, 1973, Ser. No. 328,775**

**Int. Cl. F23g** *7/06*

**U.S. Cl. 23—277 C** **5 Claims**




Apparatus for incinerating waste gas which includes a hollow outer shell having a hollow inner liner supported therein so that an air passageway is formed therebetween. Front and rear walls are provided secured to the outer shell, and an intermediate wall having an opening disposed therein is secured within the outer shell. An air inlet is formed in the outer shell

adjacent to the forward end thereof for admitting combustion air into the air passageway and means for injecting fuel gas into the outer shell at a position between the rearward end of the inner liner and the intermediate wall are provided. A waste gas inlet is formed in the outer shell for admitting waste gas thereto between the rear wall and the intermediate wall.

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**3,837,814**

## EXHAUST GAS CLEANING DEVICE

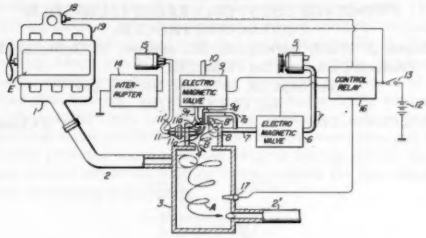
**Yasusi Tanasawa, Nagoya; Mitsumasa Yamada, Shizuoka; Mikiji Ito, Nagoya, and Kenji Ishiguro, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi; Toyota Jidosha Kogyo Kabushika Kaisha, Tokyo-shi and Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, all of, Japan**

**Filed Oct. 28, 1971, Ser. No. 193,473**

**Claims priority, application Japan, Dec. 1, 1970, 45-106601; Dec. 26, 1970, 45-128989; Dec. 26, 1970, 45-128990**

**Int. Cl. F01n** *3/14*

**U.S. Cl. 23—277 C** **5 Claims**




In an exhaust gas cleaning device comprising an exhaust gas combustion chamber provided in the exhaust system into which the exhaust gases as well as secondary air are fed in a tangential direction with respect thereto to form a vortical current of the burning gases with secondary fuel supplied thereto, the quantity of secondary air and secondary fuel being respectively regulated by respective regulating means which are controlled by a control relay according to the temperature of said exhaust gas combustion chamber and the suction vacuum of the engine, so as to maintain the exhaust gas combustion chamber in desirable condition.

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**3,837,815**

## METHOD OF RECLAIMING SELENIUM AND METAL BASE FROM ELECTROPHOTOGRAPHIC PLATES

**William E. Bixby, Deerfield, Ill., assignor to A. B. Dick Company, Niles, Ill.**

**Filed Mar. 29, 1973, Ser. No. 346,051**

**Int. Cl. B02c** *23/00, 21/00;* **C01b** *19/00*

**U.S. Cl. 23—293 R** **13 Claims**

A method for separating a coating, such as of selenium, from the smooth surface of a base material such as a metal electrophotographic plate comprising rapidly reducing the temperature of the coated base metal to far below freezing temperature of water, wetting the coated surface of the refrigerated base metal with a liquid such as water which forms a frozen layer such as ice on the coated side of the base metal, and then applying heat to effect separation of the frozen layer from the base metal with the coating adhered to the separated frozen layer, and wherein the coating material is separated as a solid from the liquid phase of the removed frozen layer.

**3,837,816**

## THERMAL AND ABRASION RESISTANT SINTERED ALLOY

**Kentaro Takahashi, Ohmiya; Minoru Hasegawa, Saitama, and Kaoru Nara, Kawaguchi, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan**

**Filed Sept. 5, 1972, Ser. No. 286,392**

**Int. Cl. B22f** *1/00*

**U.S. Cl. 29—182** **1 Claim**

An alloy prepared by adding 0.3 to 5 percent by weight of a ferrocarbide of an iron-carbon alloy containing one or more of carbide forming elements to a base comprising 0.6 to 2 percent of carbon, 0.5 to 5 percent of molybdenum, 6.0 to 15 percent of cobalt, 0.5 to 4 percent of nickel, by weight, and the balance iron and molding and sintering has large thermal resistance and abrasion resistance.

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**3,837,817**

## SLIDING MEMBER HAVING A SPRAY-COATED LAYER

**Yoshikatsu Nakamura, Kanagawa, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan**

**Filed Oct. 18, 1972, Ser. No. 298,713**

**Int. Cl. B32b** *15/00*

**U.S. Cl. 29—195** **6 Claims**

A sliding member, such as a piston ring in an internal combustion engine, having a spray-coated layer on at least its sliding surface comprising from about 10 to 50 percent by weight of molybdenum, about 10 to 50 percent by weight of a self-fluxing alloy and from about 20 to 60 percent by weight of a metal carbide or a metal oxide. The sliding member has excellent scuff resistance and abrasion resistance.

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**3,837,818**

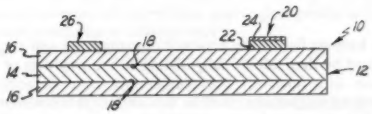
## ELECTRICAL CONTACT ARM MATERIAL AND METHOD OF MAKING

**Marvin B. Happ, Hingham, Mass.; Leonard A. Weston, Newark, Del., and Carl Redfield, N. Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Sept. 11, 1972, Ser. No. 288,204**

**Int. Cl. B32b** *15/00*

**U.S. Cl. 29—196.3** **3 Claims**




An inexpensive but improved composite strip material for use in making resilient electrical contact arms and the like is shown to comprise a strip of composite, electrically-conductive spring material having a layer of copper metallurgically bonded between outer layers of hardened stainless steel, at least one of these stainless steel layers having a stripe of solder adhered to the stainless steel material extending along the length of the composite spring material and preferably having a stripe of precious metal material displaying low electrical contact surface resistance properties extending along the length of the spring material. The solder stripe is provided on the stainless steel surface of the spring material by fluxing the stainless steel surface, by depositing a molten solder stripe on the fluxed strip surface, and by rapidly chilling the spring material as the solder is deposited thereon for solidifying the solder stripe in such a way as to assure adherence of the solder stripe to the stainless steel spring surface.

3,837,819

## ZINC DIFFUSED COPPER

Louis E. Hibbs, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 73,590, Sept. 18, 1970, Pat. No. 3,729,294, which is a division of Ser. No. 797,201, Feb. 5, 1969, Pat. No. 3,600,221, which is a continuation-in-part of Ser. No. 720,201, April 10, 1968, abandoned. This application June 19, 1972, Ser. No. 264,028

Int. Cl. B32b *15/20*

U.S. Cl. 29—199 1 Claim

The surface of a copper body which may, for example, be a coating, foil or wire, is provided with a zinc coating. The zinc coating is diffused into the copper surface to form an alloy surface zone which protects and preserves the properties of materials such as polymers and carbon that ordinarily degrade when contacted with copper.

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3,837,820

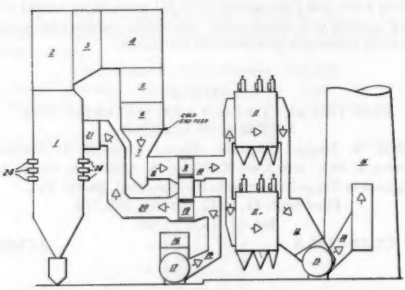
## COMBUSTION CONTROL BY ADDITIVES INTRODUCED IN BOTH HOT AND COLD ZONES

Ira Kukin, West Orange, N.J., assignor to Apollo Chemical Corporation, Clifton, N.J.

Filed Sept. 1, 1971, Ser. No. 176,979

Int. Cl. C10l *9/00*

U.S. Cl. 44—5 24 Claims



By burning fuel in the presence of manganese and magnesium, and by then additionally adding to the products of combustion at a relatively low temperature zone an additional amount of magnesium, noxious and undesirable emissions are greatly reduced and internal boiler conditions are greatly improved.

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3,837,821

## ELEVATING NATURAL GAS WITH REDUCED CALORIFIC VALUE TO DISTRIBUTION PRESSURE

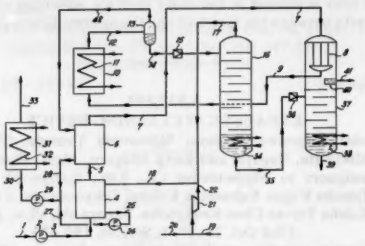
Jean-Pierre Buffiere, Saint Mande, and Maurice Grenier, Paris, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'etude et l'exploitation des procedes Georges Claude, Paris, France

Continuation of Ser. No. 837,518, June 30, 1969. This application Mar. 29, 1972, Ser. No. 239,136

Int. Cl. C10j *1/00;* C10k *1/00*

U.S. Cl. 48—196 R 10 Claims

A method of production under high pressure of a gas rich in methane, to which is added a volatile gaseous fraction in which the natural gas is brought to an intermediate pressure and a volatile gaseous fraction is added to the natural gas at the said intermediate pressure, wherein the volatile gaseous



fraction is added to the natural gas in the liquid state, after which the mixture obtained is brought to the pressure of the distribution system reheated and vaporized.

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3,837,822

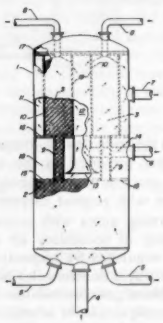
## TWO-STAGE COUNTERCURRENT FLUID-SOLID CONTACTING PROCESS

Dennis J. Ward, Barrington, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 28, 1972, Ser. No. 293,246

Int. Cl. C10g *35/10*

U.S. Cl. 48—214 2 Claims



An upflow fluid-solid contacting process in which the overall flow of solid particles is in a downward direction while the overall flow of fluids contacting the solids is in an upflow direction. The process specifically is defined as a two-stage fluid-solid contacting process in which fresh solids are added to a contacting zone at a top portion of the zone with spent solid particles removed from a lower section of the contacting zone. In the lower section of the contacting zone there is introduced a first fluid stream which passes in a countercurrent manner and in an upflow direction through the lower section. The effluent from that zone meets with a second feed fluid and passes into an upper section of the contacting zone. The processing flow in the upper section of the contacting zone is in an essentially lateral direction normal to the overall fluid flow in the lower section. More specifically, the fluid flow in the upper section is into a radial flow contacting zone where upon the fluids contact descending solids by passing in a horizontal manner to an outer shell and out of the upper section.

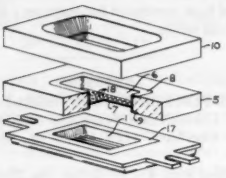
The process flow is applicable to general fluid-solid contacting processes and fluid-solid conversion processes such as hydrocracking or naphtha cracking to substitute natural gas products.

3,837,823

## BUSHING BLOCK ASSEMBLY AND SCREEN

Robert G. Shealy, Shelby, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 13, 1973, Ser. No. 424,585
Int. Cl. C03b 37/02
U.S. Cl. 65—1 6 Claims



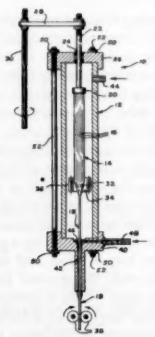
A bushing block screen and bushing assembly is described which involves the positioning of a flow block, a bushing block and a glass fiber bushing adapted to produce glass fibers at the bottom thereof in the floor of a glass furnace forehearth. The bushing block is provided with a screen covering the surface area of an internal canal provided in the bushing block. The bushing block canal communicates with a similar canal of similar dimension positioned in the flow block and the top of a fiber glass bushing. The screen is positioned near the bottom of the bushing block and the bushing block canal is lined with precious metal, preferably platinum, or a platinum alloy and is further provided with a platinum flange at the top and the bottom thereof where the bushing block contacts the flow block and the bushing respectively.

3,837,824

## DRAWING OPTICAL FIBER UNDER SUPERATMOSPHERIC PRESSURE

Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 29, 1973, Ser. No. 364,785
Int. Cl. C03c 23/20, 15/00
U.S. Cl. 65—4 2 Claims



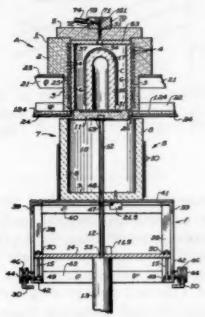
Heating and drawing bundles of optical fibers under superatmospheric pressure to avoid the formation of gas bubbles therewithin and blemishing caused by their inclusions in components drawn from the bundle. Apparatus is provided within which heating and drawing of the bundle of optical fibers is accomplished in a pressure chamber while the component being drawn therefrom is continuously removed from the chamber through a fluid sealed gland.

3,837,825

## PROCESS FOR MAKING TRANSPARENT SILICA GLASS

Ted A. Loxley, Mentor; Walter G. Barber, North Perry; Walter W. Combs, Mentor, and John M. Webb, Chagrin Falls, all of Ohio, assignors to Sherwood Refractories, Inc., East Cleveland, Ohio

Continuation-in-part of Ser. No. 135,140, April 19, 1971, abandoned. This application May 24, 1973, Ser. No. 363,622
Int. Cl. C03g 23/20
U.S. Cl. 65—18 22 Claims



A crucible formed from pulverized particles of fused quartz is fired and vacuum dried to remove all water and is thereafter placed on a heated graphite form or susceptor shaped to conform to the surface of said article and rapidly heated in an induction furnace to a high temperature, in the range of about 3000°F. to about 3150°F. The crucible is maintained at a temperature in such range in a vacuum or in a helium atmosphere for a period of at least one minute sufficient to obtain full density while avoiding substantial devitrification. The vacuum drying preferably provides the glass of the crucible with an infrared absorption beta OH factor below .01 at a wavelength of 3.5 microns. A unique apparatus is provided to carry out the process rapidly and efficiently without forming significant amounts of cristobalite and to cause gases trapped in the crucible to move radially outwardly. The process minimizes devitrification and can be employed for mass production of precision transparent amorphous quartz glass products having excellent resistance to thermal shock.

3,837,826

## COLOR SORTING OF IRRADIATED QUARTZ MATERIALS

Baldwin Sawyer, Gates Mills, Ohio, assignor to Sawyer Research Products, Eastlake, Ohio

Filed Nov. 6, 1972, Ser. No. 303,857
Int. Cl. C03c 21/00
U.S. Cl. 65—30 10 Claims

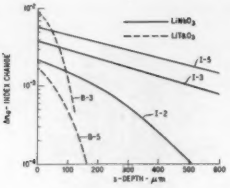
Methods of isolating quartz, glass or silicate materials having selected aluminum contents are described. The nondestructive method comprises subjecting the materials to ionizing irradiation for a period of time and at an intensity (preferably uniform) sufficient to develop the several distinctive color centers of the materials containing aluminum ions. According to the ions associated with the aluminum ions, the depth of color of each of the various tints developed corresponds to the amount of aluminum in said crystals. The colored crystals which correspond in tint and depth of color to the aluminum contents outside the desired content can be separated. In this manner, aluminum free quartz, glass or silicate materials can be isolated if present in a mixture, or fractions of such materials can be selected, each containing uniform aluminum content.

**3,837,827**

## METHOD FOR PRODUCING OPTICAL WAVEGUIDING LAYERS IN SOLID TRANSPARENT MEDIA

**John Robert Carruthers, Murray Hill, and Ivan Paul Kaminow, New Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Jan. 18, 1973, Ser. No. 324,884**
**Int. Cl. C03c *15/00*; C03b *29/00***
**U.S. Cl. 65—30** **6 Claims**




The specification describes a method for producing light guiding layers in transparent crystals, such as $LiNbO_3$ and $LiTaO_3$, by selectively outdiffusing the $Li_2O$ component, by heating above 1,000° C in a nonreactive environment thereby effecting a change in the refractive index of the surface portion of the crystal. Effective light guiding layers in acoustooptic and electrooptic devices based on these crystals can be produced by this technique.

**3,837,828**

## METHOD OF MELTING LASER GLASS IN A NOBLE METAL CONTAINER IN A CONTROLLED REDUCING ATMOSPHERE

**Earl D. Dietz, and Paul R. Wengert, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio**

**Filed Sept. 1, 1971, Ser. No. 177,090**
**Int. Cl. C03b *5/00***
**U.S. Cl. 65—32** **20 Claims**

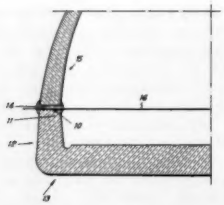
This invention provides methods for melting glass laser compositions to provide glass laser rods with a minimum of noble metal inclusions and a minimum of dissolved noble metal content. The process comprises melting the laser glass in a noble metal container that is preferably platinum in a controlled reducing atmosphere in which the partial pressure of oxygen is between about $10^{-2}$ and $10^{-30}$ atmospheres.

**3,837,829**

## METHOD OF MANUFACTURE FOR CATHODE-RAY TUBES FOR COLOR TELEVISION RECEIVERS

**Pierre Lebel, Kremlin-Bicetre, France, assignor to France-Couleur, Paris, France**

**Division of Ser. No. 35,831, May 8, 1970, abandoned. This application May 10, 1972, Ser. No. 255,883**
**Int. Cl. C03c *27/02***
**U.S. Cl. 65—59** **4 Claims**



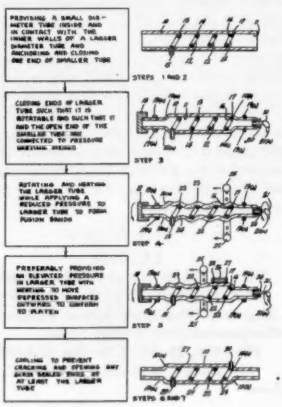
A method of manufacture for cathode-ray tubes for color television receivers of the type in which a grid consisting of parallel metal wires is disposed in the tube facing the front wall on which the television image is formed. The wires of the grid are of a non-magnetic alloy with a high cobalt content, as a rule more than 20 percent by weight, the composition further being such that in the course of heat treatment for joining the front portion of the tube with the conical portion by means of a sealing compound, oxides favorable to the air-tight connection between the alloy and the sealing compound appear at the surface of the wires which renders unnecessary a second step of heat treatment for forming a sealing fillet at the outer ends of the wires.

**3,837,830**

## METHOD FOR FORMING INTEGRAL INTERNAL CHANNELS IN GLASS TUBING

**Wolfgang R. Eberhart, 1115 Jarvis St., Windsor, Ontario, Canada**

**Filed Sept. 14, 1972, Ser. No. 288,971**
**Int. Cl. C03b *23/20***
**U.S. Cl. 65—54** **12 Claims**



A method for forming integral internal channels defined by a wall with an annular cross-section inside high softening temperature glass tubing is described. In particular, a reduced pressure is provided inside a rotating tube with heating outside which softens the glass for deformation by the reduced pressure while a smaller tube is maintained in position in contact with the inside walls of the larger tube. The pressure is the smaller tube is usually the same as that in the larger tube and is such that it can collapse at the point of contact to form at least one fusion band along the inside wall of the larger tube. The position of the smaller tube is maintained such that the larger tube has concave depressions between the fusion bands. Usually the heating is accomplished by a gas flame ring burner positioned under the larger tube and moved progressively along the larger tube until the desired fusion of the tubes is completed. The next step which is preferred is to provide a positive pressure in the larger tube with heating to soften the glass to move the concave depressions out and mold them against a platen provided in spaced relation to the depressions outside of the larger tube. This can also be progressively accomplished with the ring burner. While the glass tubes are being manipulated, the sections being fused and molded are maintained above the strain point temperature of the glass. The glass is then usually annealed and then it is cooled. The articles produced are strain free, compact, durable and particularly useful for heat transfer applications such as reflux, still-head and take-off condensers used in conducting chemical reactions and liquid distillation operations. Preferably the

channels form a helical coil inside the tube. In addition an electrical resistance wire can be provided in the channels to produce reaction vessels suitable for heating liquids and for conducting chemical reactions.

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**3,837,831**

## MELTING AND REFINING OF AMBER GLASS

**Ronald H. Moore, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio**

**Filed Mar. 14, 1973, Ser. No. 341,166**
**Int. Cl. C03g 5/16**
**U.S. Cl. 65—134** **7 Claims**

Disclosed is a process for improving the melting and refining characteristics of soda-lime amber glasses containing iron and sulfur as the color-producing ingredients, by substituting copper oxide in the batch in part for the iron or sulfur colorants in a manner to maintain a normal amber color density while decreasing the incidence of gaseous inclusions in the glass.

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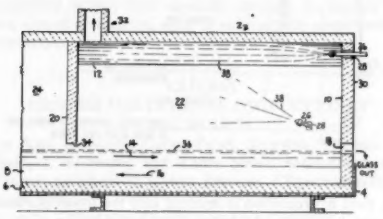
**3,837,832**

## APPARATUS FOR MAKING FLOAT GLASS

**George A. Pecoraro, Lower Burrell; John F. McConnell, and Leonard A. Knavish, both of Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Division of Ser. No. 138,699, April 29, 1971, Pat. No. 3,734,701. This application Feb. 27, 1973, Ser. No. 336,285**
**Int. Cl. C03b 18/02, 5/22**
**U.S. Cl. 65—182 R** **7 Claims**



In the production of high-quality flat glass by the float process, tridymite-frost stone defects are safely avoided by providing burners in the refiner zone of the furnace to shield the crown of that portion of the furnace from contact with alkali vapors, and at the same time providing not only a barrier that substantially separates the refiner-zone headspace from the melter headspace but also preferably a means associated with refiner-zone headspace for exhausting or venting it.

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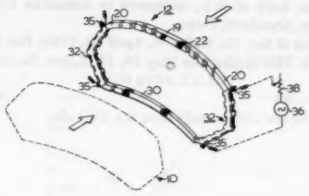
**3,837,833**

## HEATED COVER PROTECTOR FOR PRESS BENDING BLOCK

**Gerard Couture, Oshawa, Ontario, and Leo H. Lindberg, Whitby, Ontario, both of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.**

**Filed June 12, 1972, Ser. No. 261,952**
**Claims priority, application Canada, Nov. 2, 1971, 126674**
**Int. Cl. C03b 23/02**
**U.S. Cl. 65—288** **15 Claims**

A press bending member having a shaping surface of predetermined contour covered with a flexible cover member which tends to wear rapidly in certain areas is provided with metal cover protectors to eliminate wear in said areas. The metal cover protectors are heated by passing electrical currents therethrough to eliminate any tendency for thermal shock to occur in glass sheets contacting the same during press bending operations.



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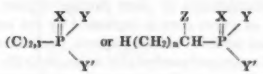
**3,837,834**

## PLANT REGULATOR COMPOSITIONS AND METHOD

**Kenneth Lee Hill, Doylestown, Pa., and John Francis McCarthy, Medina, N.Y., assignors to FMC Corporation, New York, N.Y.**

**Continuation-in-part of Ser. No. 843,853, July 22, 1969, abandoned, which is a continuation of Ser. No. 609,286, Jan. 12, 1967, abandoned. This application June 19, 1972, Ser. No. 264,022**
**Int. Cl. A01n 9/36**
**U.S. Cl. 71—76** **12 Claims**

Chemical compounds of the formula



wherein $(C)_{2\text{-}3}$ represents a two or three carbon atom straight-chain hydrocarbon group; Z is hydroxy or acetoxy; n is 1 or 2; X is oxygen or sulfur; and Y and Y' represent substituents such that the compound is a phosphonic acid, monoester, oxide, salt, halide, or a corresponding sulfur compound; are effective in modifying growth and development of plants, particularly in retarding or arresting growth without killing the plants. Different types of plant regulator activity are exemplified.

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**3,837,835**

## PREPARATION OF NON-DUSTING AND NON-CAKING GRANULAR FERTILISERS

**Ferdinand Weinrotter, Linz/Donau; Walter Muller, Leonding near Linz/Donau; Wilfried Krulla, Doppl near Linz/Donau, and Gerhard Stern, Linz/Donau, all of Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz/Donau, Austria**

**Filed Oct. 20, 1972, Ser. No. 299,360**
**Claims priority, application Germany, Oct. 28, 1971, 2153789; Austria, Oct. 25, 1971, 9193/71**
**Int. Cl. C05c 1/00**
**U.S. Cl. 71—59** **14 Claims**

Granules of fertiliser based on ammonium nitrate are conditioned to make them non-dusting and non-caking by applying to the surface of the granules a protective coating of a substituted s-triazine derivative.

3,837,836

## HERBICIDAL COMPOSITION AND METHOD OF USING 4-ALKYL-AMINO-3-NITROQUINOLINES

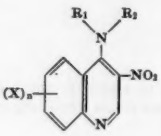
Robert Eugene Diehl, Trenton, and Richard Joseph Magee, Princeton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 820,649, April 30, 1969, Pat. No. 3,700,674. This application May 26, 1972, Ser. No. 257,464

Int. Cl. A01n 9/22

U.S. Cl. 71—94 9 Claims

The herbicidal compounds have the formula:



wherein:

$R_1$ and $R_2$ are each hydrogen, lower alkyl, or (lower alkylthio)lower alkyl except that $R_1$ and $R_2$ may not both be hydrogen,

X is halo, nitro, or trifluoro(lower)alkyl, and $n$ is 0 to 3.

3,837,837

## METHOD OF INCREASING SUGAR ACCUMULATION IN PLANT STORAGE ORGANS

Jacob Amir, Beer-Sheva, Israel, and Joe H. Cherry, West Lafayette, Ind., assignors to Purdue Research Foundation, Lafayette, Ind.

Filed Aug. 5, 1971, Ser. No. 169,537

Int. Cl. A01n 9/24

U.S. Cl. 71—113 5 Claims

Sugar accumulation in plant storage organs, especially in the kernels of sweet corn is increased by the introduction, in vivo, of water soluble chelating agents, particularly water soluble salts of aminopolycarboxylic acids, into the plant system approximately one to five days prior to harvest of the plant product at the normal harvest period.

3,837,838

## HIGH STRENGTH, DUCTILE COBALT-BASE DENTAL ALLOY

M. Hamdi A. Mohammed, 5G Talcott Ridge Rd., Farmington, Conn. 06032

Filed Dec. 18, 1972, Ser. No. 316,273

Int. Cl. C22c 19/00

U.S. Cl. 75—134 F 6 Claims

A low-cost cobalt-base alloy system suited for dental and other biomedical appliances is essentially free of carbon and molybdenum, and has an alloy base comprising cobalt, chromium, and nickel as essential major alloying elements and a member of the group comprising tantalum and niobium alloyed therewith as the major strengthening element to produce an alloy matrix having a structure which is ductile at room temperature, has high stacking fault energy to achieve further ductility and an average low electron hole number for the complete alloy matrix to prevent the formation of embrittling phases during cooling. The alloy system utilizes coherent strengthening compounds which form an integral part of the alloy matrix. Combinations of selected percentages, by weight, of cobalt, chromium, nickel, e.g. 35–45 percent cobalt, 20–32 percent chromium, and 30–40 percent nickel, are disclosed as the alloy base and is hardened by selected percentages of strengthening elements, e.g., tantalum and niobium, which have sufficient solubility in the alloy base to produce significant solid solution hardening and combine with cobalt to form coherent precipitate particles. Modifications are also disclosed.

3,837,839

## METHOD OF PREPARING IRON POWDER SUITABLE FOR MAGNETIC RECORDING

Hans Rau, Laurensberg; Joachim Rolf Wegener, Oberforstbach, both of Germany, and Peter Townsend Greene, Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,908

Claims priority, application Germany, Mar. 17, 1972, 2212933

Int. Cl. C22b 5/12

U.S. Cl. 75—.5 AA 3 Claims

A method of preparing a metal powder which consists mainly of iron by reduction of finely divided acicular iron oxide hydrate. The iron oxide hydrate particles are doped with a metal which is catalytic for hydrogen reactions (for example Co, Ni, Ru). The reduction to metal then occurs more rapidly.

3,837,840

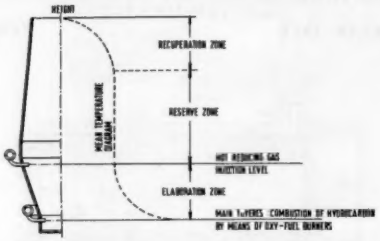
## SHAFT FURNACE OPERATION WITH A DOUBLE FUEL INJECTION

Arthur Gerard Poos, Embourg, and Nicolas Gerassimos Ponghis, Liege, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels, Belgium

Filed Oct. 12, 1971, Ser. No. 188,013

Int. Cl. C21b 5/00

U.S. Cl. 75—42 16 Claims




A fluid hydrocarbon is injected into the lower portion of a furnace, by means of a burner. The temperature of the combustion gas, resulting from the burning of the hydrocarbon and any coke in the furnace, is at least 1,600°C. Reducing gas is injected into the upper portion of the furnace at the level of the lower part of the reserve zone. The temperature of the reducing gas as it enters the furnace is equal to or slightly greater than the temperature of the material in the furnace at the level of injection of the reducing gas.

3,837,841

## PROCESS FOR CONTROLLED REMOVAL OF CARBON UNDER VACUUM FROM HIGHLY ALLOYED STEELS

Horst Kutscher, Dortmund-Berghofen, Germany, assignor to Vacmetal Gesellschaft fur Vakuum-Metallurgie m.b.H., Dortmund, Germany

Filed Mar. 17, 1972, Ser. No. 235,506

Claims priority, application Germany, Mar. 25, 1971, 2114600

Int. Cl. C21c 5/30, 7/10

U.S. Cl. 75—49 7 Claims

In a process for removing carbon from a highly-alloyed steel, such as a chrome steel, the steel is treated by blowing oxygen into or on to the molten steel in a vacuum vessel to remove carbon from the melt. The temperature of the gases extracted from the vessel is monitored to detect an abrupt drop in the gas temperature, at which point the oxygen treatment is arrested and the temperature of the melt is immediately measured. The composition of the melt is then corrected on

the basis of the known equilibrium concentration of carbon and chrome, or other constituent, which occurs at that measured melt temperature. The composition of the melt may be corrected either by adding further alloying substances thereto, or by further oxygen treatment, as the situation requires.

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**3,837,842**

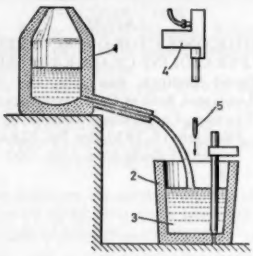
**A METHOD FOR PROJECTING PIECES OF A DEOXIDIZING AGENT INTO MOLTEN STEEL**

**Toyosuke Tanoue, Toyonaka; Taiji Araki, and Takeo Aoki, both of Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan**

**Filed Aug. 2, 1971, Ser. No. 168,072**

**Int. Cl. C21c** *7/06*

**U.S. Cl. 75—58** **5 Claims**




A method for projecting pieces of a deoxidizing agent into molten steel wherein the pieces are thrust into a body of molten steel to a depth such that the pieces will become completely dissolved as they float upwardly through the molten steel. Thus, loss of deoxidizing agent is substantially eliminated and a homogenous steel product is obtained.

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**3,837,843**

**PROCESS FOR THERMAL PRODUCTION OF MAGNESIUM**

**Rene Pons, Grenoble; Marcel Poyet, Gourdan-Polignan; Jean Desbert, Barbazan, and Andre Menà, Saint-Benat, all of France, assignors to Societe Francais d'Electrometallurgie, Paris, France**

**Filed Oct. 29, 1973, Ser. No. 410,965**

**Claims priority, application France, Oct. 30, 1972, 72.38394**

**Int. Cl. C22b** *45/00*

**U.S. Cl. 75—67** **9 Claims**

The invention relates to processes for production of magnesium of greater purity by reaction of a reducing agent with a substance containing magnesium oxide in the presence of a molten slag. The process according to the invention consists of agglomerating the reducing agent (ferro-silicon) with a binder formed of a mixture of water and slag which has been slowly cooled, drying and calcining and introducing the agglomerated material into the furnace in lieu of the lumps of reducing agent normally employed.

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**3,837,844**

**WEAR RESISTING MAGNETIC MATERIAL HAVING HIGH PERMEABILITY**

**Mutsuo Makita, Kanagawa-ken; Wataru Hayakawa, Odawara; Masaaki Hayashi, Odawara, and Yukio Kitagawa, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

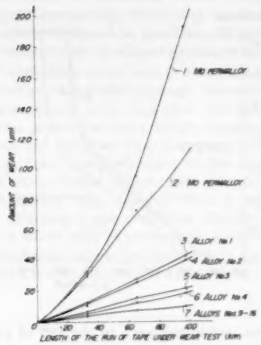
**Filed Aug. 6, 1971, Ser. No. 169,638**

**Claims priority, application Japan, Aug. 10, 1970, 45-69222**

**Int. Cl. C22c** *19/00, 39/40*

**U.S. Cl. 75—122** **4 Claims**

A wear resisting magnetic material having high permeability in which not more than 10 percent by weight of at least one additive element selected from the group consisting of V and Ti is added to the conventional Fe-Ni series permalloy such as




Fe-Ni, Fe-Ni-Mo, Fe-Ni-Cr and so on in order to enhance it's wear resisting property without impairing workability.

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**3,837,845**

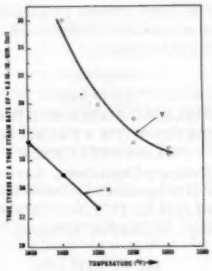
**OXIDE COATED FERROUS METAL POWDER**

**Nathan Lewis Church, Warwick, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.**

**Filed Mar. 27, 1972, Ser. No. 238,238**

**Int. Cl. B22f**

**U.S. Cl. 75—.5** **11 Claims**




Steel powder forged at a temperature at which the steel is characterized by a microstructure containing specified percentages of ferrite and austenite contributes to low flow stress and other indicated advantages.

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**3,837,846**

**AUSTENITIC STEEL ALLOY ADAPTED TO BE WELDED WITHOUT CRACKING**

**Horst Becker, and Gerhard Kohlert, both of Altena, Germany, assignors to Vereinigte Deutsche Metallwerke AG, Zeilweg, Germany**

**Filed Mar. 23, 1972, Ser. No. 237,488**

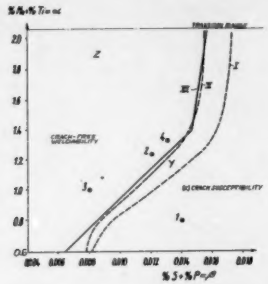
**Claims priority, application Germany, Apr. 8, 1971, 2117233**

**Int. Cl. C27c** *37/10*

**U.S. Cl. 75—124** **14 Claims**

An austenitic steel alloy capable of being welded without cracking by the argon arc-welding process, consists of substantially 16 to 35 percent by weight chromium, 15 to 45 percent by weight nickel, 0 to 5 percent by weight molybdenum, 0 to 3 percent by weight copper, 0.1 to 1.5 percent by weight aluminum, 0.01 to 0.10 percent by weight carbon, 0.30 to

0.60 percent by weight silicon, 0 to 0.008 percent by weight calcium, 0 to 0.05 percent by weight zirconium, and manganese, titanium, sulfur and phosphorus in weight-percent



concentrations within the area to the left of curve I in the graph of FIG. 2 of the drawing, the balance being iron and the usual (inevitable) impurities.

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**3,837,847**

**CORROSION RESISTANT FERRITIC STAINLESS STEEL**

**Clarence George Bieber, West Milford, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.**

**Continuation-in-part of Ser. No. 841,138, July 11, 1969, abandoned. This application Dec. 23, 1971, Ser. No. 211,740**

**Int. Cl. C22c** *39/20, 37/10*

**U.S. Cl. 75—128 W** **13 Claims**

A ferritic stainless steel resistant to pitting and crevice corrision and containing in addition to iron, correlated amounts of chromium, molybdenum, silicon, nickel and metal from the group consisting of titanium, vanadium and columbium. Other constituents can also be present.

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**3,837,848**

**METHOD OF MAKING TOOLS BY IMPREGNATING A STEEL SKELETON WITH A CARBIDE, NITRIDE OR OXIDE PRECURSOR**

**Otto Wessel, Duisburg-Ungelsheim, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany**

**Filed June 23, 1971, Ser. No. 156,029**

**Claims priority, application Germany, June 29, 1970, 2032814**

**Int. Cl. B22f** *3/26*

**U.S. Cl. 75—203** **24 Claims**

Method of making tools by compressing, e.g., steel particles into a porous skeleton, having high temperature strength and being penetrated by a continuous network of pores of total volume below 50 percent and by filling at least part of the pores with a non-metallic material that is substantially undeformable and harder than the skeleton at temperatures up to about 650° C.

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**3,837,849**

**MULTILAYERED VARIABLE SPEED PHOTORECEPTOR AND METHOD OF USING SAME**

**Anthony J. Ciuffini, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Feb. 20, 1973, Ser. No. 334,176**

**Int. Cl. G03g** *5/04;* **G03g** *13/22*

**U.S. Cl. 96—1 R** **10 Claims**

A xerographic member which comprises a supporting substrate having thereon an insulating blocking layer, a layer of halogen doped selenium overlaying the insulating layer, and a transport layer of vitreous selenium overlaying the halogen doped layer. The member is imaged by charging to a negative polarity followed by uniformly exposing to light which results in the negative charge being trapped in the halogen doped layer. The member is then uniformly positively charged and exposed to a pattern of light which results in the formation of a latent electrostatic image.

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**3,837,850**

**PHOTOCONDUCTIVE RUTILE TITANIUM DIOXIDE**

**Hajime Miyatuka, Kanagawa-ken, Japan, assignor to Rank Xerox, Ltd., London, England**

**Filed Dec. 29, 1972, Ser. No. 319,116**

**Int. Cl. G03q** *5/08, 5/04*

**U.S. Cl. 96—1.5** **6 Claims**

Disclosed is a process for the production of $TiO_2$ having an increased photosensitivity (while maintaining continuous tone reproduction) by the heat treatment of a hydrated oxide sol obtained from hydrolyzed organic titanic esters.

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**3,837,851**

**PHOTOCONDUCTOR OVERCOATED WITH TRIARYLPYRAZOLINE CHARGE TRANSPORT LAYER**

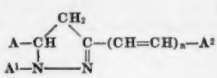
**Meredith David Shattuck, San Jose, and William Joseph Weiche, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Jan. 15, 1973, Ser. No. 323,677**

**Int. Cl. G03g** *5/04, 5/06, 5/08*

**U.S. Cl. 96—1.5** **4 Claims**

Electrophotographic plates are provided having a charge generation layer and a separate charge transport layer comprising a tri-aryl pyrazoline compound having the formula:



wherein *n* is zero or one, and A, $A^1$ and $A^2$ are each aryl radicals.

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**3,837,852**

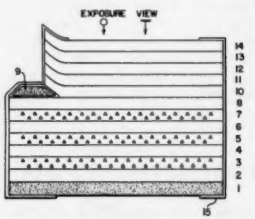
**COLOR DIFFUSION TRANSFER PROCESS UTILIZING AZO COUPLING TO ACTUATE DIFFUSION OF COLOR PROVIDING SPECIES**

**Felix Viro, Apalachin; Robert Thomas Shannahan, Endicott, and Burton Harvey Waxman, Endwell, all of N.Y., assignors to GAF Corporation, New York, N.Y.**

**Filed Oct. 2, 1972, Ser. No. 293,940**

**Int. Cl. G03c** *7/00, 1/100, 1/40*

**U.S. Cl. 96—3** **13 Claims**




In a color diffusion transfer process utilizing azo coupling as a means to actuate solubilization and to accelerate the diffusion transfer process of color providing species, light sensitive layers are provided which contain oil dispersions of 4-equivalent color formers capable of coupling in the alkaline processing solution with the oxidation product of a p-phenylene diamine color developer and thereby form imagewise

non-diffusible and insoluble dye species. These color formers are also capable of reacting with incorporated highly diffusible carboxy or sulfo substituted diazonium salts or their precursors to yield alkali soluble and highly diffusible azo dyes which diffuse imagewise to a mordanted receiving layer. In the receiving layer a p-phenylene diamine developer is oxidized for the purpose of converting these azo dyes via oxidative coupling into azo methine or indoaniline dye species thereby providing a true reproduction in color, hue and density of the scene originally recorded in the light sensitive silver halide layers.

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**3,837,853**

## ELECTROPHOTOGRAPHIC METHOD OF IMAGING WITH AN ELEMENT CONTAINING AN AMORPHOUS SEMICONDUCTOR

**Tatsuo Masaki, Tokyo; Hiroshi Hanada, Yokohama, and Nobuo Kitashima, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan**

**Continuation of Ser. No. 43,535, June 4, 1970, abandoned. This application Oct. 31, 1972, Ser. No. 302,586**

**Claims priority, application Japan, June 10, 1969, 44-45920; Nov. 24, 1969, 44-94093; Nov. 24, 1969, 44-94094**

**Int. Cl. G03g** *5/04*

**U.S. Cl. 96—1.5** **6 Claims**

An electrophotographic photosensitive member which comprises mainly a base layer, an amorphous semiconductor capable of reversible transition between a highly resistive and conductive state, and a photoconductive layer. An electrophotographic process utilizing said photosensitive member produces images of high contrast and high resolving property.

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**3,837,854**

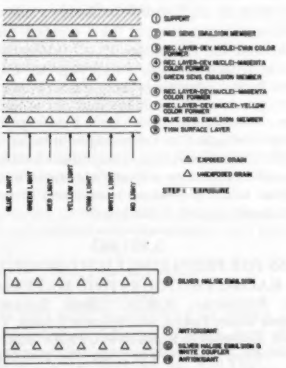
## PHOTOGRAPHIC COLOR PROCESS BASED ON CONTROLLED FLOW OF SILVER IONS

**Burton Harvey Waxman, Endwell; Robert Thomas Shannahan, Endicott, and Felix Viro, Apalachin, all of N.Y., assignors to GAF Corporation, New York, N.Y.**

**Filed Aug. 14, 1972, Ser. No. 280,426**

**Int. Cl. G03c** *7/16, 1/76, 1/34*

**U.S. Cl. 96—22** **24 Claims**




Positive multicolor images are produced by exposing, developing with a black-and-white developer, washing and then treating with an alkaline processing solution containing a paraphenylene diamine or other color producing developer and minute quantities of silver halide solubilizing agents a film package constructed of emulsion layers backed by color providing layers containing nucleating species and color providing couplers designed to react in said color providing layers with oxidized color developer produced by the catalytic reduction of solubilized silver ions in areas corresponding to unexposed portion of the film package. Between each emulsion and its contiguous nucleating and color providing layer unit is placed a separation layer which impedes the flow of silver ions from one emulsion layer to any layer other than the layer providing color complementary to the sensitized layer. Quantities of silver halide solvent are selected to assure a proper solubilization rate coupled with a rapid physical development effecting a sink condition whereby the nucleating layers pull silver ions of unexposed silver halide grains from adjoining layers only to produce colors complementary to the sensitization of the respective emulsion layers.

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**3,837,855**

## PATTERN DELINEATION METHOD AND PRODUCT SO PRODUCED

**Denis Lawrence Rousseau, and William Robert Sinclair, both of Summit, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.**

**Filed May 9, 1973, Ser. No. 358,727**

**Int. Cl. G03c** *5/00*

**U.S. Cl. 96—35** **11 Claims**

A process for the fabrication of a supported iron oxide pattern involves electromagnetic wave irradiation of a blank. The blank consists of a layer of iron oxide which is soluble in, for example, an acid medium. Irradiation results in insolubilization so that delineation is accomplished by immersing the processed blank in a suitable solvent.

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**3,837,856**

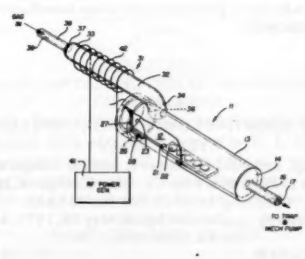
## METHOD FOR REMOVING PHOTORESIST IN MANUFACTURE OF SEMICONDUCTOR DEVICES

**Stephen M. Irving, Cupertino, and Kyle E. Lemons, San Jose, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.**

**Continuation of Ser. No. 49,613, June 25, 1970, abandoned, which is a continuation of Ser. No. 4,165, Jan. 15, 1970, abandoned, which is a continuation of Ser. No. 628,425, April 4, 1967, abandoned. This application Sept. 22, 1972, Ser. No. 291,246**

**Int. Cl. G03c** *5/00*

**U.S. Cl. 96—36.2** **3 Claims**

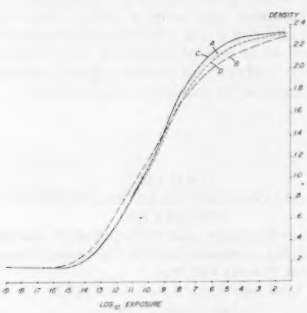



Dry method for removing photoresist utilizing gases excited by electrodeless radio frequency excitation, commonly called glow discharge in the manufacture of semiconductor devices.

3,837,857
**PHOTOGRAPHIC MATERIALS CURVE SHAPE STABILIZED WITH CARBOXY SUBSTITUTED 4-THIOURACILS**

Thomas Irving Abbott, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 37,323, May 14, 1970,. This application Nov. 2, 1972, Ser. No. 303,295
Int. Cl. G03c 1/84, 7/32
U.S. Cl. 96—74 14 Claims




Photographic layers, emulsions and elements comprising them are stabilized against color balance distortion by addition of carboxy substituted 4-thiouracils. Specific examples of stabilizers include 1-carboxyalkyl 5(H)-4-thio-cyclopenta-(d)-uracil.

3,837,858
**PRINTING PLATE AND METHOD OF MAKING THE SAME**

Richard T. Traskos, Brooklyn, Conn., assignor to Lith-Kem Corporation, Lynbrook, Long Island, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,043
Int. Cl. G03f 7/02
U.S. Cl. 96—75 14 Claims

An aqueous developable subtractive printing plate is presented comprising a photosensitized hydrophilic surface having a photosensitive diazo-borofluoride salt thereon.

A method for making a photosensitized printing plate is also presented wherein a photosensitive diazo-borofluoride salt is coated on the plate.

3,837,859
**LIGHT-SENSITIVE COMPOSITION CONTAINING XYLENE RESIN**

Nobuo Tsuji, and Eiichi Hasegawa, both of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 30, 1972, Ser. No. 257,621
Claims priority, application Japan, May 28, 1971, 46-36831
Int. Cl. G03c 1/68, 1/70
U.S. Cl. 96—91 N 11 Claims

A light-sensitive composition comprising a light-sensitive resin selected from the group consisting of a cinnamic acid resin, a cinnamylidene acetate resin and a cyclized rubber resin, and a xylene resin is disclosed.

3,837,860
**PHOTOSENSITIVE MATERIALS COMPRISING POLYMERS HAVING RECURRING PENDENT O-QUINONE DIAZIDE GROUPS**

Leo Roos, 36 Riveredge Rd., New Shrewsbury, N.J.

Filed June 16, 1969, Ser. No. 833,756
Int. Cl. G03c 1/52, 1/68
U.S. Cl. 96—91 D 17 Claims

A photosensitive composition which comprises a natural or synthetic polymer having pendent recurring o-quinone diazide groups. The compositions are useful in elements for the preparation of relief images, photoresist applications, etc.

3,837,861
**GELATINO-SILVER HALIDE EMULSIONS CONTAINING MODIFIED GELATIN GRAFT COPOLYMERS**

Bohdan Rakoczy, East Brunswick, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 23, 1973, Ser. No. 344,167
Int. Cl. G03c 1/72, 1/02
U.S. Cl. 96—114 32 Claims

Films prepared from emulsions containing a novel graft copolymer, made from the reaction between one or more ethylenically unsaturated monomers and a hydrolyzed and modified gelatin, exhibit a remarkable resistance to becoming desensitized, a defect which occurs when the film is handled or "kinked". The gelatin used herein may be first hydrolyzed with acid or base followed by reaction of the product therefrom with a dibasic acid anhydride prior to further reaction with the ethylenically unsaturated monomer to form the graft copolymer. In some instances, prior to formation of the graft copolymer, the product above may be further reacted with an aldehyde, such as allyl aldehyde or 2,4-dihydroxybenzaldehyde. These novel graft copolymers are added to the silver halide emulsion at any point during the preparation of the emulsion and are particularly useful in X-ray products.

3,837,862
**SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION**

Keisuke Shiba; Akira Sato, and Akira Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 5, 1972, Ser. No. 286,396
Claims priority, application Japan, Sept. 2, 1971, 46-67712
Int. Cl. G03c 1/14
U.S. Cl. 96—126 17 Claims

A silver halide photographic emulsion sensitized with the combination of (1) at least one dimethine merocyanine dye wherein the carbon atom at the 2-position of an oxazole nucleus bearing an alkyl group containing a sulfo or a carboxyl group on the nitrogen atom at the 3-position thereof and the carbon atom at the 5-position of a 2-thiohydantoin nucleus bearing a hydrogen atom or an alkyl group on the nitrogen atom at the 1- and 3-positions thereof are connected with each other through a dimethine chain, and (2) at least one of a J-band type carbocyanine dye wherein a sulfo group-containing alkyl group is attached to the nitrogen atom at the 3-position of a naphthothiazole nucleus, a naphthoselenazole nucleus, a benzothiazole nucleus or a benzoselenazole nucleus and the carbon atom at the 2-position is attached to mesoalkyl-substituted trimethine chain is disclosed.

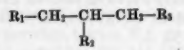
3,837,863
**PROCESS FOR PREPARING LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS**

Kaiichiro Sakazume, Tokyo; Eiichi Sakamoto, Hanno; Kiyomitsu Mine, Tokyo, and Masaru Kanbe, Yamanashi, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd.

Filed June 19, 1972, Ser. No. 264,286
Claims priority, application Japan, June 18, 1971, 46-43286
Int. Cl. G03c 1/16
U.S. Cl. 96—130 5 Claims

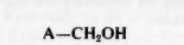
Light-sensitive photographic materials are prepared by incorporating various photographic additives into definite layers

of light-sensitive silver halide photographic materials. The photographic additives are dissolved in a solvent and are then dispersed in a silver halide-gelatin colloid. The solvent used is a halogenated alcohol of the general formula (I) or (II),



(I)

wherein $R_1$, $R_2$ and $R_3$ are individually a hydrogen atom, a chlorine atom or a hydroxy group, two of them being a chlorine atom and a hydroxy group, or



(II)

wherein A is $CF_3$ or H $(CF_2—CF_2)n$ (where *n* is an integer of 1 to 3.).

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**3,837,864**

**COMPOSITION FOR PREVENTING BIODETERIORATION OF CONCRETE IN BIOLOGICALLY ACTIVE WATER**

**Dinu Stefan Moraru; Ion Pitis, both of Bucharest, and Dumitru Topala, Constanta-Aleen, all of Romania, assignors to Institutul de Cercetari in Constructii si Economia Constructiilor-Incerc, Bucharest, Romania**

**Filed Oct. 10, 1972, Ser. No. 296,088**

**Claims priority, application Romania, Oct. 15, 1970, 68476**

**Int. Cl. C09d** *5/14*

**U.S. Cl. 106—15 AF** **1 Claim**

A composition for the treatment of concrete structures to protect them against biodegradation in contact with biologically active water. The density of the treatment composition is designed such that it penetrates to a depth to about 10 mm and has a specific gravity which is $10^7$ times greater than the solution surface tension as against concrete. The composition may contain a toxic substance which reduces biological attack and white spirit to obtain the desired specific gravity.

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**3,837,865**

**SETTABLE DENTAL COMPOSITIONS**

**Michael A. Pellico, Los Angeles, Calif., assignor to Denton Industries, Inc., Los Angeles, Calif.**

**Filed Dec. 8, 1972, Ser. No. 313,449**

**Int. Cl. C09k** *3/00*

**U.S. Cl. 106—35** **10 Claims**

A two-component system is provided wherein the components are adapted to interact to form an oral, settable dental composition. The first component includes a high molecular weight, liquid polycarboxylic acid as, for example, $C_{36}$ dimer acid, $C_{54}$ trimer acid and mixtures thereof and, advantageously, is formulated to also include rosin and a reaction rate activator such as acetic acid. The second component contains a metallic base such as zinc oxide or a mixture of zinc oxide and magnesium oxide in a suitable fluid carrier. The components interact to form a solid, cementitious, coherent mass which is substantially devoid of odor and taste during oral application.

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**3,837,866**

**LOW MELTING VANADATE GLASSES**

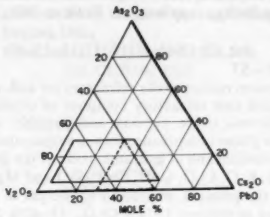
**Joseph W. Malmendier, and Joseph E. Sojka, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed Apr. 24, 1972, Ser. No. 247,118**

**Int. Cl. C03c** *3/12*

**U.S. Cl. 106—47 R** **2 Claims**

Glasses are disclosed that melt at low temperatures in the range of 500°–900°C. and that are composed essentially of 25–85 percent by weight vanadium oxide, 5–60 percent lead and/or cesium oxide, and 5–45 percent arsenic oxide. The




glasses may be adapted either for encapsulating and sealing electrical elements, or for the fabrication of semiconducting elements.

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**3,837,867**

**PbO—CdO—$Tl_2O$—$Fe_2O_3$ GLASSES**

**William H. Dumbaugh, Jr., Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.**

**Filed Mar. 26, 1973, Ser. No. 345,082**

**Int. Cl. C03c** *3/12, 3/24, 3/30*

**U.S. Cl. 106—47 R** **4 Claims**

A new system of glasses is composed essentially of 33–68 cation percent PbO, 2.5–27 cation percent CdO, 10–30 cation percent $Fe_2O_3$, and 4–28 cation percent $Tl_2O$. The glasses are low-melting, have extremely high densities and refractive indices, and have excellent infrared transmission characteristics.

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**3,837,868**

**STABILIZED BISMUTHATE GLASSES**

**Albert J. Berleue, Bradford, and William H. Dumbaugh, Jr., Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.**

**Filed Mar. 26, 1973, Ser. No. 345,083**

**Int. Cl. C03c** *3/12, 3/24, 3/30*

**U.S. Cl. 106—47 R** **8 Claims**

Iron oxide is used to stabilize infrared transmitting, lead and cadmium bismuthate glasses. The resulting glasses contain, in cation percent, 8 to 80% $Bi_2O_3$, 0–57% PbO, 0–32% CdO, at least 5% Pbo + CdO, 5–32.5% $Fe_2O_3$, and 0–15% miscellaneous other oxides.

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**3,837,869**

**CELSIAN CONTAINING DIELECTRIC CROSSOVER COMPOSITIONS**

**Rudolph J. Bacher, New Castle, and Takashi Nakayama, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed July 20, 1972, Ser. No. 273,355. The portion of the term of this patent subsequent to Apr. 18, 1989, has been disclaimed.**

**Int. Cl. C03c** *3/10, 3/04, 3/30*

**U.S. Cl. 106—53** **8 Claims**

Improved crossover dielectric compositions which are finely divided powders of glass and preformed celsian; the compositions are capable of producing printed capacitors of reduced dielectric constant.

3,837,870

## FUSED CAST REFRACTORY PRODUCTS CONTAINING CHROMIC OXIDE

Joseph Recasens, Sorgues, and Maurice Gardiol, Avignon, both of France, assignors to L'Electro-Refractaire, Paris, France

Filed May 11, 1973, Ser. No. 359,596

Claims priority, application France, May 12, 1972, 72.17015

Int. Cl. C04b *35/10, 35/12, 35/48*

U.S. Cl. 106—57 10 Claims

The invention relates to the refractory art and, more specifically, to fused cast refractory compose of crystalline phases based on chromic oxide, zirconia and, possibly, alumina, and of a vitreous phase comprising silica, a substantially saturating amount of alumina and at least one oxide of the group consisting of $Na_2O$, $K_2O$, $Li_2O$, CaO, BaO, BeO and MgO, the composition of the product, expressed by weight in terms of the oxides, being as follows: 1–74% $Cr_2O_3$, 15–40% $ZrO_2$, 3–76% $Al_2O_3$, 7.5–20% $SiO_2$ and a minor amount of at least one oxide of the group consisting of $Na_2O$, $K_2O$, $Li_2O$, CaO, BaO, BeO and MgO.

The products of the invention are useful for the construction of glass furnaces.

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3,837,871

## HEXAGONAL SILICON ALUMINUM OXYNITRIDE

Gerald Q. Weaver, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed Apr. 24, 1972, Ser. No. 246,818

Int. Cl. C04b *35/56, 35/58*

U.S. Cl. 106—65 9 Claims

The quaternary compound silicon aluminum oxynitride having a hexagonal phenacite crystal structure is described. The quaternary compound is formed by reacting silicon oxynitride with an appreciable percentage of aluminum. The percent of the product which is converted to the hexagonal quaternary compound is believed to be about 6 times the percentage of aluminum in the product, up to about 15 parts Al/100 parts $Si_2ON_2$ when the silicon oxynitride in the product is largely converted to cthe hexagonal quaternary compound $Si_{2-x}AlaxON_{2}$ As more aluminum is added, the relative proportions of aluminum and silicon in the compound seem to change until the formula $SiAlON_2$ is reached at which point no additional aluminum can be accommodated in the crystal lattice. When the mixture is hot processed, the product has high strength and less than about 1 percent porosity. The process of making this novel product is also described.

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3,837,872

## METHOD OF MAKING WASTES NON-POLLUTING AND DISPOSABLE

Jesse R. Conner, Pittsburgh, Pa., assignor to Chemfix Inc.,, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 1,554, Jan. 8, 1970, abandoned. This application Jan. 4, 1972, Ser. No. 215,421

Int. Cl. C04b *31/00*

U.S. Cl. 106—74 3 Claims

An aqueous solution of an alkali metal silicate is mixed with waste material and a silicate setting agent to cause the silicate and setting agent to react with each other. The proportions of the silicate and setting agent are such that the reaction converts the mixture into a consolidated chemically and physically stable solid product that is substantially insoluble in water and in which pollutants are entrapped in the solidified silicate so that the waste material is rendered non-polluting and fit for ultimate disposal.

3,837,873

## COMPOSITIONS FOR USE IN FORMING A DOPED OXIDE FILM

Gordon P. Pollack; John G. Fish, both of Richardson, and Samuel R. Shortes, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 31, 1972, Ser. No. 258,173

Int. Cl. C09k *3/00*; H01l *7/44*

U.S. Cl. 106—287 SE 5 Claims

A doped silicon oxide-forming film is produced on a semiconductor wafer by coating the wafer with a solution prepared by the reaction of tetraethylorthosilicate with acetic anhydride in the presence of a suitable solvent. A suitable dopant species is also contained in the solution. Upon heating the wafer to diffusion temperature, a doped oxide film is formed, and the dopant diffuses from the doped oxide film into the semiconductor.

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3,837,874

## BLACK PIGMENT AND METHOD OF MAKING SAME

George B. De Laney, Detroit, and Robert D. Shannon, Ann Arbor, both of Mich., assignors to Ebonex Corporation, Melvindale, Mich.

Filed July 12, 1973, Ser. No. 378,752

Int. Cl. C08h *17/08*

U.S. Cl. 106—307 9 Claims

A black pigment for use in paints and the like consists of diatomaceous earth and activated carbon saturated with color bodies derived from unclarified corn syrup. The diatomaceous earth and activated carbon employed in the pigment are coated on a screen used as a filter as part of a decoloring step in corn syrup production. When the coating becomes saturated with color bodies from the syrup it is removed from the screen, washed with water to remove any residual syrup, and then dried by heating it at a low temperature. The dried material is then crushed in a ball mill and graded as to particle size in an air separator to achieve a desired size range.

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3,837,875

## COMPOSITION FOR CLEANING, SEALING, PRESERVING, PROTECTING AND BEAUTIFYING HOST MATERIALS

John A. Murphy, 920 E. 36th Pl., Tulsa, Okla. 74105

Filed Jan. 19, 1973, Ser. No. 325,109

Int. Cl. C08h *9/00*

U.S. Cl. 106—264 1 Claim

A composition for indepth cleaning, sealing, preserving, protecting and beautifying host materials consisting of a mixture of boiled linseed oil, turpentine, pine oil, a dryer and atomized metallic copper with the copper being present in a ratio of about 28 parts per million. The composition is applied to the host material such as terrazzo floors, wood surfaces, furniture, panelling, marble, gem stones, artifacts, glass, plexiglas, metals, fiberglas, cement, brick, vinyl and other type flooring. The composition seals, fills, polishes, cleans, serves as a bacteriacide, pesticide and fungicide. The composition has no toxic properties upon contact with the skin.

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3,837,876

## ORGANOSILICONE COMPOSITIONS

Tetsuya Mayuzumi, and Yoshio Inoue, both of Annaka, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Filed Jan. 15, 1973, Ser. No. 323,340

Claims priority, application Japan, Jan. 13, 1972, 47-475997

Int. Cl. C07g *17/00*

U.S. Cl. 106—287 SB 5 Claims

Organosilicone compositions which consist essentially of the product of the reaction of a mixture of a certain aminoalkylalkoxysilane and a certain epoxyalkylalkoxysilane. The organosilicone compositions are used in the form of a blend with a sealant or a primer coating for improving the adhesion of

such blends onto various surfaces, or the adhesion of the sealant itself onto the various surfaces, respectively.

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3,837,877

## PRODUCTION OF ROD-SHAPED MICRO-CRYSTALLITES FROM CLAY

Orlando Leonard Bertorelli, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 141,180, May 7, 1971, abandoned. This application Jan. 10, 1973, Ser. No. 322,602
Int. Cl. C08h *17/04*; C09c *1/28*
U.S. Cl. 106—288 B 4 Claims

A method for preparing unique rod-shaped micro-crystalline particulates from kaolin clay is disclosed. The method involves the hydrothermal treatment of an aqueous dispersion of kaolin clay and a hydroxide of an alkali metal which transforms the clay into alumino-silicate rod-shaped micro-crystallites. The product has particular utility as reinforcing agents for non-elastomer type plastics. By controlling the process variables a product having predetermined characteristics and/or properties can be obtained.

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3,837,878

## PROCESS FOR TREATING SILICA FILLERS

Melvin D. Beers, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,486
Int. Cl. C08h *17/04*; C09c *1/28*
U.S. Cl. 106—308 Q 11 Claims

A process for treating silica fillers comprising contacting the silica filler with a mixture of a hydroxyl amine, a cyclic siloxane and silyl nitrogen compound. These additives are added to the silica simultaneously and allowed to come in contact with the silica filler at a temperature in the range of 100° to 180°C. The remaining amounts of the additives are removed through vacuum devolatilization after the treatment. A filler treated in this manner has a large number of organosiloxy groups appended to it.

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3,837,879

## REMOVING OF WORN COATING FROM METAL ELECTRODES

Guy Sluse, Rixensart, and Gustave Joannes, Meise, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Apr. 18, 1972, Ser. No. 245,192
Claims priority, application Luxembourg, Apr. 21, 1971, 63028
Int. Cl. C23f *1/00*
U.S. Cl. 117—2 R 13 Claims

A method including immersing a coated electrode into a molten salt bath including essentially at least one bisulphate or pyrosulphate of an alkali metal or ammonium, at a temperature between 300° and 500° C, and water-rinsing the so-treated electrode after cooling thereof.

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3,837,880

## METHOD OF PREVENTING COATING DIFFUSION FLOW

Cecil Behringer, Edina, Minn., and George J. Kamin, Towanda, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Division of Ser. No. 141,351, May 7, 1971, , which is a division of Ser. No. 16,583, March 4, 1970, Pat. No. 3,623,921. This application Nov. 24, 1972, Ser. No. 309,367
Int. Cl. B44d *1/52*
U.S. Cl. 117—5.5 2 Claims

A solid material containing a rare earth compound suspended in a fugitive carrier is useful in preventing braze and diffusion flow by applying the slurried compound to the material to be brazed or diffusion coated in a continuous layer by conventional methods. Alternative compositions are suspensions of rare earth compounds in a fugitive carrier and refractory metal oxides, admixed with rare earth compounds and mixtures thereof suspended in a fugitive carrier.

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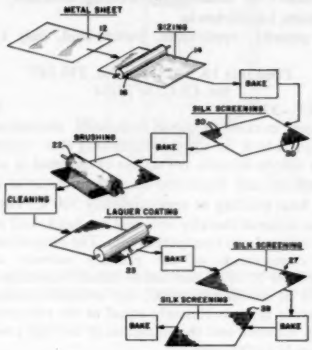
3,837,881

## METHOD FOR COATING AND TEXTURING A SURFACE

Leslie P. Hix, Union, Ohio, assignor to Angell Manufacturing Company, Dayton, Ohio

Filed July 3, 1972, Ser. No. 268,596
Int. Cl. B44c *5/00*
U.S. Cl. 117—8 7 Claims




The surface of a polished metallic panel is coated with a sizing and a heavy transparent ink is then silk screened in a pattern thereon. Next the surface is abraded, with the transparent ink protecting the areas it covers to produce a pattern of bright and dull areas. The entire surface is next covered with a protective lacquer coating, following which additional layers of transparent ink are silk screened thereonto substantially in registration with the first layer, yielding lense-like ink accumulations which produce an optical effect giving an illusion of depth to the panel surface. The built up areas actually appear as depressions.

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3,837,882

## OPTICAL BODIES WITH NON-EPITAXIALLY GROWN CRYSTALS ON SURFACE

Carl F. Swinehart, University Heights, and James T. Lindow, Cleveland Heights, both of Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

Filed Sept. 2, 1971, Ser. No. 177,447
Int. Cl. B44d *5/02*; C09k *1/06*
U.S. Cl. 117—16 14 Claims

This is a process for growing non-epitaxially a different crystal upon a base crystal surface and thereafter destroying said different crystal, thereby generating a uniformly random arrangement of surface irregularities which are independent of lattice orientation in the base crystal. The texture of the treated surface is unlike prior art surfaces, whether produced chemically or mechanically, and specular reflections are essentially eliminated.

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3,837,883

## IMAGE TRANSFER PROCESS

Elsie L. Menz, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 886,838, Dec. 22, 1969, Pat. No. 3,706,553. This application Oct. 30, 1972, Ser. No. 302,367The portion of the term of this patent subsequent to Dec. 19, 1989, has been disclaimed.
Int. Cl. G03g *13/14*
U.S. Cl. 117—17.5 7 Claims

A method of transferring insulating image material containing a static charge from an image bearing surface to an electri-

cally non-conductive image receiving surface by means of coulombic attraction and the rearrangement of electrical charges.

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3,837,884
METHOD OF PRODUCING BLUE COLORED TRANSPARENT LAYERS

Peter Rheinberger, Furstentum, Liechtenstein, assignor to Balzers Patent-Und Beteiligungs-Aktiengesellschaft, Balzers, Furstentum, Liechtenstein

Claims priority, application Switzerland, July 12, 1971, 10243/71
Filed July 10, 1972, Ser. No. 270,547
Int. Cl. C23c *13/04*
U.S. Cl. 117—33.3 9 Claims

A powdery mixture of cobalt hydroxide, aluminium oxide, and oxides which absorb substantially no visible light, preferably silicon dioxide, is vacuum evaporated in an oxidizing atmosphere and deposited on a base material and subsequently heat treating at approximately 300°C. The coating of the base material thereby obtained is a hard, well adherent, pure blue colored and transparent film. The proportions of the principal components of the primary mixture used for evaporation are 30 to 40 percent of cobalt hydroxide and 5 to 15 percent of aluminium oxide, the refractive index of the whole mixture is approximately equal to the refractive index of the base material and the thickness of the film produced is approximately 1/1000 mm.

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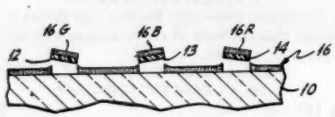
3,837,885
CATHODE RAY TUBE MANUFACTURE

Louis J. Angelucci, Jr., Norristown, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Continuation of Ser. No. 63,823, Aug. 14, 1970, abandoned.
This application Aug. 17, 1972, Ser. No. 281,464
Int. Cl. G03c *5/00*
U.S. Cl. 117—33.5 CM 1 Claim




A process of manufacturing color image screens of the type comprising a multiplicity of triplets of tri-color phosphor dots adherent to a glass substrate and spaced from each other by intermediate light absorbing screen areas. A layer of photo-bondable material is deposited, exposed, and developed, whereby to provide on the substrate dots of photo-bondable material occupying elemental areas corresponding in size and location to the desired phosphor dots. A layer of light absorbing material is then applied across the substrate and across said elemental areas, after which a debonding agent is used which is effective to loosen the photo-bonded material remaining in said elemental areas and cause the same to break free from the substrate in the form of minute individual platelets which carry with them the light absorbing material which overlies the same. This exposes elemental substrate areas in a dark matrix, and the desired phosphor dots are formed by depositing in these areas phosphors of the desired fluorescence.

3,837,886
PROCESS FOR PRODUCING PHOTOGRAPHIC MATERIALS

Sumitaka Tatsuta, and Wataru Ueno, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-Shi, Kanagawa, Japan

Filed May 12, 1971, Ser. No. 142,815
Claims priority, application Japan, May 15, 1970, 45-41358The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.
Int. Cl. G03c *1/78*; B44d *1/092*
U.S. Cl. 117—34 12 Claims

There is disclosed a process for producing a photographic material using a polystyrene film as a support by subjecting a biaxially drawn, surface-roughened polystyrene film to a high frequency electrodeless discharge in a vacuum at a frequency of 13.56 MHz, and then coating an aqueous emulsion or suspension containing gelatin as a binder on the film. The bond strength between the film support and the coating proves superior to those materials in the prior art.

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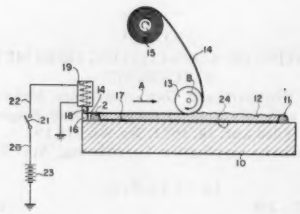
3,837,887
PROCESS FOR THE PREPARATION OF PRINTING PLATE OF PHOTOSENSITIVE RESIN

Kiyoshi Akamatsu, Tokyo; Masayasu Maruta, Ohi, and Yasushi Yonekura, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 45,745, June 12, 1970, Pat. No. 3,687,785.
This application June 14, 1972, Ser. No. 262,827
Claims priority, application Japan, June 16, 1969, 44-46817
Int. Cl. C03c *1/74, 3/26*; G03c *1/00*
U.S. Cl. 117—34 1 Claim




An apparatus for the preparation of a printing plate comprising a layer of photo-sensitive liquid resin, wherein the improvement comprises an application means for laminating an anti-wrinkle plastic sheet on the resin surface upon being doctored and at the same speed with that of the doctor.

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3,837,888
DUPLICATING MATERIAL

Gerhard Hoffmann, Vienna, Austria; Walter Schutzner, deceased, late of Vienna, Austria (by Lilly Schutzner, heir); Ingrid Schutzner, and Peter Schutzner, heirs, both of Vienna, Austria, assignors to Kores Holding Zug AG, Zug, Switzerland

Filed Apr. 25, 1972, Ser. No. 247,463
Claims priority, application Austria, Apr. 28, 1971, 3651/71
Int. Cl. B41m *5/10*
U.S. Cl. 117—15 4 Claims

A pressure sensitive duplicating material comprises upper and lower sheets. Each upper sheet on its rear side is provided with a color layer having a loosened structure and under writing pressure being selectively transferable to a lower or copy

sheet only provided with a special adhesive layer. Said selective transferability can be deleted if an additional binder is applied to the color layer in certain areas, the additional binder filling interstices of said color layer.

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3,837,889

## COLOUR FORMERS

**Nigel Hughes, and Andrew Hunter Morris Renfrew, both of Blackley, Manchester, England, assignors to Wiggins Teape Limited, London, England**

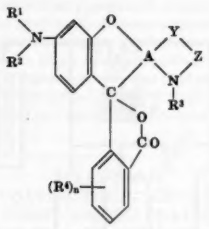
**Filed Feb. 16, 1973, Ser. No. 333,347**

**Claims priority, application Great Britain, Feb. 21, 1972, 7848/72**

**Int. Cl. B41m** *5/22*

**U.S. Cl. 117—36.2** **6 Claims**

Colourless colour formers which are compounds characterised by the general formula:



wherein $R^1$, $R^2$ and $R^3$ each independently represents hydrogen, an optionally substituted alkyl radical having from one to five carbon atoms or forms part of a heterocyclic ring containing the attached nitrogen atom; $R^4$ represents a halogen atom or an alkyl, aryl, aralkyl, alkoxy, nitro, optionally substituted amino, acyl, carboxy, cyano or sulphamyl radical; *n* represents an integer of from **0** to **4**; A represents an optionally substituted aromatic ring the points of attachment being at two pairs of ortho positions; Y represents a direct link, optionally substituted methylene, oxygen, sulphur or a group of the formula $—NR^6—$ wherein $R^6$ denotes hydrogen or an optionally substituted alkyl, aryl or aralkyl radical; and Z represents an optionally substituted divalent organic radical such that a five-or six-membered ring is formed with Y, $—NR^3—$ and A.

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3,837,890

## DRAPERY MARKING METHOD UTILIZING INVISIBLE DYES

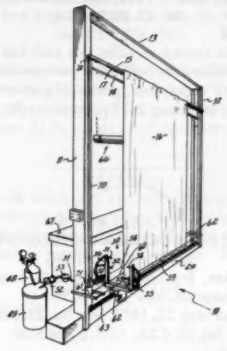
**Paul E. Sumner, 1009 Lanette Dr., Cincinnati, Ohio 45230, and Joseph E. Peter, Cincinnati, Ohio, assignors to said Sumner, by said Peter**

**Division of Ser. No. 106,975, Jan. 18, 1971, Pat. No. 3,749,051. This application Dec. 14, 1972, Ser. No. 315,179**

**Int. Cl. B05b** *17/00*

**U.S. Cl. 117—37 R** **2 Claims**

A drapery or curtain is hung from an adjustable frame so that it hangs freely in a similar manner to its intended use. One or more dye squirting orifices or nozzles traverse the width of the drapery at predetermined heights to mark cut-off or fold lines on the drapery and/or lining. The dye may be invisible as applied on the drapery and may become visible only when exposed to light of a predetermined wavelength for subsequent cutting, folding or sewing of the drapery. The orifice may be a



hypodermic neddle which provides a very thin continuous unbroken liquid stream or jet that marks the line on the drapery.

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3,837,891

## PROCESS OF STRENGTHENING POLYCRYSTALLINE REFRACTORY OXIDE FIBERS

**Raymond Frank Tietz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.**

**Filed June 30, 1972, Ser. No. 268,022**

**Int. Cl. C23d** *7/00*

**U.S. Cl. 117—46 FA** **7 Claims**

A process for strengthening polycrystalline refractory oxide fibers, particularly alumina fibers, which comprises subjecting them to a silicone-containing liquid to obtain a coating on the fiber. On subsequent heating of the coated fiber, the silicone is decomposed to silica, and the silica is vitrified into an adherent, optically uniform, thin coating. By controlling the thickness of the coating, refractory oxide fibers having improved tensile properties are obtained.

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3,837,892

## GLASS FIBER REINFORCED ELASTOMERS

**Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed Jan. 28, 1972, Ser. No. 221,680**

**Int. Cl. B32b** *17/02*; **B44d** *1/44*

**U.S. Cl. 117—62.1** **16 Claims**

This invention is addressed to the improvement in the bonding relationship between glass fibers and elastomeric materials in which glass fibers are treated with a functional organo silicon compound containing at least one of an amino, a hydroxy or an epoxy group, and then the glass fibers are treated either with a polyurethane prepolymer containing free isocyanates or an organic polyisocyanate for subsequent reaction with free hydroxyl groups, or a polyurethane prepolymer or a polyhydroxylated compound.

The polyurethane prepolymer containing free isocyanate groups may be prepared by reaction of excess polyisocyanate with a hydroxyl terminated polybutadiene or a polyhydroxylated polyester prepared by reaction of a polyol with a polycarboxylic acid of anhydride containing ethylenic unsaturation. These prepolymers are capable of undergoing co-cure or vulcanization with elastomeric material.

3,837,893

## NON-LAMINATED, NON-DYEABLE METALLIC YARN

Peter J. Schoots, Anderson, S.C., assignor to Lurex N.V., Amsterdam, Netherlands

Filed June 7, 1972, Ser. No. 260,673
Int. Cl. B05c 9/04
U.S. Cl. 117—68 4 Claims

A non-dyeable coated metallic flat yarn cut from a transparent film metallized on both sides and coated on both sides with an ethylene copolymer, preferably an ethylene acrylic acid copolymer containing 2–15 percent acrylic acid.

3,837,894

## PROCESS FOR PRODUCING A CORROSION RESISTANT DUPLEX COATING

Robert C. Tucker, Jr., Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 22, 1972, Ser. No. 255,457
Int. Cl. C23c 7/00; C23d 5/00
U.S. Cl. 117—70 A 10 Claims

A process for producing a corrosion resistant duplex coating having a metallurgically sealed undercoat, said undercoat being obtained by plasma depositing two or more materials onto a substrate in a substantially unreacted state so that when the coated substrate is heat treated in a non-oxidizing atmosphere, reaction/diffusion will occur between the materials thereby forming a metallurgically sealed undercoat securely bonded to the substrate and to a primary overcoat.

3,837,895

## ORGANIC RESIN-GLASS-METAL COMPOSITE

Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 78,899, Oct. 7, 1970, Pat. No. 3,676,292, and a continuation-in-part of Ser. No. 231,834, March 6, 1972, , and a continuation-in-part of Ser. No. 254,666, May 18, 1972,. This application July 7, 1972, Ser. No. 269,869
Int. Cl. B44d 1/14, 1/34
U.S. Cl. 117—70 A 31 Claims

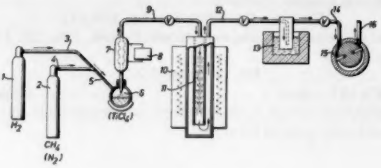
A composite, the process of making the composite and articles formed of the composite. The composite comprises a copper base alloy component containing from about 2 to 12% aluminum and the balance essentially copper. A glass or ceramic component comprising a coating of a glass or ceramic frit covering from about 40 to 100% of the surface area of a major surface of the copper base alloy component. The glass or ceramic component is bonded to the copper base alloy component. A heat resistant organic resin coating is provided over the glass or ceramic component and the major surface of the copper base alloy component. The composite is particularly useful for cooking utensils.

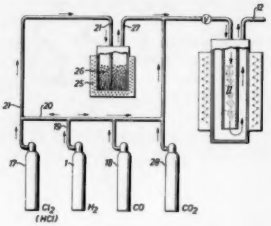
3,837,896

## SINTERED CEMENTED CARBIDE BODY COATED WITH TWO LAYERS

Jan Nils Lindstrom, Hagersten; Bo Folke Jonsson, Huddinge, and Fall Johan Olof William Ohlsson, Enskede, all of Sweden, assignors to Sandvik Aktiebolag (a/k/a Sandvikens Jernverks Aktiebolag), Sandviken 1, Sweden

Filed Nov. 3, 1972, Ser. No. 303,362
Claims priority, application Sweden, Nov. 21, 1971, 14479/71
Int. Cl. C23c 11/14, 13/02; C23d 5/00
U.S. Cl. 117—70 A 3 Claims





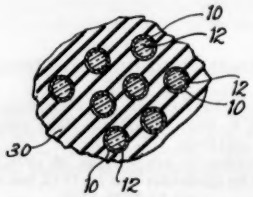
A sintered hard metal body (e.g., a cutting insert) is provided as to wear resistance by depositing thereon an intermediate thin coating of a metallic carbide or metallic nitride free from binder metal and applying over this intermediate coating a thin ceramic coating free from binder metal.

3,837,897

## GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 4, 1972, Ser. No. 250,391The portion of the term of this patent subsequent to Dec. 5, 1989, has been disclaimed.
Int. Cl. B32b 17/04; C08g 31/24; C07f 7/02
U.S. Cl. 117—72 17 Claims



Improvements in the bonding relationship between glass fibers and elastomeric materials wherein glass fibers are treated with a composition containing as the essential component a copolymer of an amino silane and a resorcinolato silane. Alternatively, the glass fibers can also be treated with a composition formulated of an elastomer and a resorcinol for-

maldehyde resin prepared in the presence of a copolymer of an amino silane and a resorcinolato silane. The resulting composition and glass fibers treated therewith are used for reinforcement of elastomeric materials.

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**3,837,898**

## GLASS FIBER SIZE COMPOSITION

**Frank Paul McCombs, Granville, and Michael Graeg Roberts, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio**

**Filed June 19, 1972, Ser. No. 264,091**
**Int. Cl. B32b** *17/02, 17/10;* **C08d** *7/00*
**U.S. Cl. 117—72** **26 Claims**

This invention is addressed to an improved size composition for use in the treatment of glass fibers in the manufacture of glass fiber textiles, glass fiber reinforced plastics and glass fiber reinforced elastomeric products wherein the size is formulated to contain, as the essential ingredients, a polybutadiene, and preferably a low-molecular weight polybutadiene, and a glass fiber anchoring agent. Bundles of glass fibers sized with the composition of the invention are particularly well suited for impregnation with an elastomer compatible material containing a resorcinol-aldehyde resin component and an elastomer component for use in the manufacture of glass fiber reinforced elastomeric products.

In one embodiment, the glass fiber anchoring agent is a mixture of a polyamino silane and hyrolyzable amino-substituted akyl silane. The composition may also contain a polymerizable alkenyl aromatic compound, a heat activated free radical intiator, a thixotropic gel agent, a poly-alpha-olefin or a glass fiber lubricant.

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**3,837,899**

## METHOD OF COATING THE INTERIOR SURFACE OF A METAL VESSEL AND THE COATED VESSEL

**Bobbie L. Carlberg, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.**

**Filed June 14, 1972, Ser. No. 262,893**
**Int. Cl. B44d** *1/14;* **B32b** *15/04*
**U.S. Cl. 117—92** **3 Claims**

Method of coating the interior surface of metal vessels with a first coating of a mastic-like material and second coating of a hydraulic cement.

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**3,837,900**

## SEMI-PERMEABLE MEMBRANE

**Robert D. Englert, Corona Del Mar; Lester P. Berriman, 18871 Portofino Dr., Irvine, and John L. Rendall, Portola Valley, all of Calif., assignors to Koratec, Inc., San Francisco, Calif.**

**Continuation of Ser. No. 132,171, April 7, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,362**
**Int. Cl. F26b** *3/34;* **C08g** *9/00, 9/10*
**U.S. Cl. 117—93.1 DH** **28 Claims**

A treated cellulosic reverse osmosis membrane having decreased compaction and better resistance to flux rate decrease with time as compared with an untreated membrane. An untreated membrane is contacted with cross-linking resins such as methylolated melamines and subjected to microwave radiation.

**3,837,901**

## DIFFUSION-COATING OF NICKEL-BASE SUPERALLOY ARTICLES

**Alan U. Seybolt, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Aug. 21, 1970, Ser. No. 66,069**
**Int. Cl. C23c** *9/02*
**U.S. Cl. 117—107.2 P** **10 Claims**

A nickel-base superalloy article is provided with an oxidation-resistant coating by heating it to 1,050°C for 3 hours in a bed consisting of a mixture of fine particles of $FeAl_3$ (40%), $NH_4F$ (0.2%) and $Al_2O_3$ under a hydrogen atmosphere.

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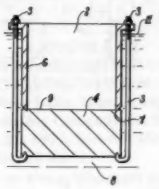
**3,837,902**

## METHODS OF MAKING ALUMINUM LEAD ALLOYS

**Lionel Stern, 3/47 Studley Park Rd., Kew, Australia**

**Filed Dec. 15, 1972, Ser. No. 315,670**
**Claims priority, application Australia, Dec. 17, 1971, 7438/71**
**Int. Cl. C23c** *1/06*
**U.S. Cl. 117—114 R** **3 Claims**




The invention concerns aluminium-lead ingots or other articles as well as bearings and other products made therefrom and also to methods of making such ingots or other articles. The improved aluminium-lead ingot is made from an aluminium-tin ingot having a substantially continuous tin rich network which is expelled from the aluminium matrix and replaced by lead in the network passages originally occupied by the tin rich phase.

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**3,837,903**

## TREATMENT OF CELLULOSIC MATERIALS TO IMPART FLAME RESISTANCE THERETO

**Giffin D. Jones, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.**

**Filed July 21, 1972, Ser. No. 273,834**
**Int. Cl. B44d** *1/22*
**U.S. Cl. 117—138** **3 Claims**

Normally flammable cellulosic material rendered flame resistant by the addition thereto of from about 10 and 30 weight percent, based on the weight of cellulosic material, of calcined boron phosphate.

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**3,837,904**

## METHOD OF SIZING CARBON FIBERS

**James Edward Hill, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.**

**No Drawing. Continuation-in-part of Ser. No. 17,928, March 9, 1970, abandoned. This application Feb. 29, 1972, Ser. No. 230,447**
**Int. Cl. C08j** *1/44*
**U.S. Cl. 117—139.5 A** **9 Claims**

A method for sizing carbon fibers to improve handleability and strand strength of yarns, rovings, tapes, tows with a size, comprising a resin such as an epoxide, a polyimide, a polyamide or a polyester and a reactive functionally terminated polymer dissolved therein which percipitates therefrom when the resin is subjected to a curing temperature. Examples of

reactive functionally-terminated polymer include carboxy-terminated butadiene/acrylonitrile copolymer, mercaptan-terminated butadiene/acrylonitile copolymer, and other relatively low molecular weight polymers with reactive end-groups such as hydroxyl, carboxy and thiol.

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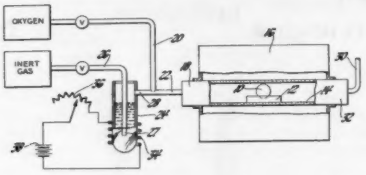
### 3,837,905
### THERMAL OXIDATION OF SILICON

**John W. Hile, Birmingham, and Mao-Chieh Chen, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.**

**Continuation-in-part of Ser. No. 182,586, Sept. 22, 1971, abandoned. This application Aug. 14, 1972, Ser. No. 280,490**
**Int. Cl. C23c *11/00*; B44d *5/12***
**U.S. Cl. 117—201** **7 Claims**




Silicon dioxide is thermally grown on a silicon surface in an oxygen atmosphere containing trichloroethylene ($C_2HCl_3$) vapor. Smaller concentrations of trichloroethylene provide clean oxide layers. Significantly larger concentrations provide an oxidation rate increase. Metal-oxide-semiconductor (MOS) devices can be produced having an initially low oxide space charge and an improved electrical stability under bias-temperature stress.

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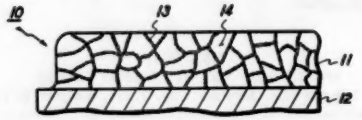
### 3,837,906
### METHOD OF MAKING A XEROGRAPHIC BINDER LAYER, AND LAYER SO PREPARED

**Robert N. Jones, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Continuation-in-part of Ser. No. 88,842, Nov. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 627,664, April 3, 1967, abandoned. This application Oct. 16, 1972, Ser. No. 298,056**
**Int. Cl. G03g *5/04*; C23c *3/00***
**U.S. Cl. 117—201** **13 Claims**

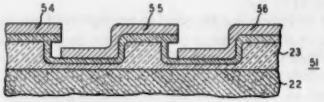



A xerographic binder layer which comprises inorganic photoconductive particles contained in an insulating, fused, inorganic glass matrix, the photoconductive particles are present in an amount from about 1 to 25 percent by volume of the binder layer, and in the form of a plurality of continuous paths through the thickness of the layer. The method of making and imaging the binder layer is also described.

### 3,837,907
### MULTIPLE-LEVEL METALLIZATION FOR INTEGRATED CIRCUITS

**Carl Neil Berglund, Warren Twp., Somerset County; Edward Haig Nicollian, Murray Hill; Michael Francis Tompsett, Summit, all of N.J., and Herbert Atkin Waggener, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Mar. 22, 1972, Ser. No. 236,886**
**Int. Cl. B44d *1/18*; H01l *5/02***
**U.S. Cl. 117—212** **1 Claim**




A method of forming multi-level metallization in integrated circuits with essentially zero effective lateral spacing between adjacent isolated metal portions. Indentations are formed at least partially through a first dielectric layer; and a second dielectric layer having apertures registered with and smaller than the indentations is formed thereover such that portions of the second layer overhang the indentations at the perimeters thereof. A thin metal layer then is deposited over the surface of the structure. Because the second dielectric layer overhangs the indentations, the deposited metal is discontinuous at the perimeter of each of the indentations if the deposited metal layer is kept sufficiently thin. Selective connection of adjacent metal portions at any portion of the perimeter of any indentation is made by any of a variety of techniques, such as electroless plating of gold through a photoresist mask.

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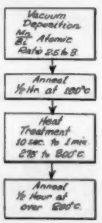
### 3,837,908
### MANGANESE BISMUTH FILMS WITH NARROW TRANSFER CHARACTERISTICS FOR CURIE-POINT SWITCHING

**George W. Lewicki, Studio City, and John E. Guisinger, Altadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.**

**Continuation-in-part of Ser. No. 57,439, July 23, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,913**
**Int. Cl. H01f *10/02***
**U.S. Cl. 117—239** **8 Claims**


Vacuum Deposition to 2% Atomic Ratio 2.5 to 3
Anneal ½ Hr. at 100°C
Heat Treatment 10 sec. to 1 min 275° to 300°C.
Anneal ½ Hour at over 100°C.

Manganese bismuth films having improved characteristics for recording information by Curie-point switching, and especially for Curie-point recording of information in analogue form, can be produced by a vacuum deposition of Bi and Mn with an atomic ratio of Mn to Bi between 2 and 3.5 or 1.4 and 1.6, followed by a specialized heat treatment which includes very brief exposure to a temperature between about 275° and 300°C. Similar MnBi films can be produced more reliably and reproducibly if the initial Bi layer is annealed prior to deposition of the Mn layer. Such an annealing step renders most other factors of the processing relatively non-critical. Deposi-

tion of both initial layers is preferably carried out in a vacuum approaching $10^{-4}$ Torr, but at least traces of oxygen are then made available to the reaction site prior to the subsequent reaction of the Mn and Bi layers to form ferromagnetic MnBi.

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**3,837,909**

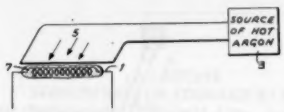
**COATED COIL EMISSIVE ELECTRODE**

**Richard A. Menelly, Danvers, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.**

**Filed July 27, 1972, Ser. No. 275,644**

**Int. Cl. H01j** *1/4;* **B44d** *1/02*

**U.S. Cl. 117—224** **6 Claims**




A coated coil emissive electrode of the type utilized in fluorescent lamps and a method for making such an electrode. The electrode includes a tungsten coil, a bonding layer of an emissive form of barium tungstate coating said tungsten coil, and a layer of porous barium oxide coating said barium tungstate, said barium tungstate bonding said barium oxide to said tungsten coil. The electrode is made by coating said tungsten coil wuth a mixture of barium peroxide, cellulose nitrate and butyl cellosolve and heating said coated coil to the exothermal decomposition temperature of said cellulose nitrate. The exothermal decompositon of said cellulose nitrate raises the temperature of the barium peroxide to its exothermal decomposition temperature thereby forming said bonding layer of the emissive form of barium tungstate and releasing bubbles of oxygen causing the pores in said barium oxide.

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**3,837,910**

**METHOD OF MANUFACTURING A POLYCRYSTALLINE FERRITE BODY**

**Karel Van der Laan, and Hans Peter Peloschek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Oct. 4, 1971, Ser. No. 186,254**

**Claims priority, application Netherlands, Oct. 7, 1970, 7014697; Aug. 18, 1971, 7111359**

**Int. Cl. C04b** *35/30, 35/38*

**U.S. Cl. 117—234** **4 Claims**

A method of manufacturing a polycrystalline ferrite body obtained by sintering a compressed block of the starting material. A readily detrition-resistant material having interdigitated crystals of an average grain size of more than 50 microns is obtained by adding prior to sintering a material from the group $BaF_2$, $SrF_2$; the oxides of B, Bi, Ca, Cu, Mg, Pb, Si, V; and $Fe_3(PO_4)_2$ and choosing a very particular combination of added quantity and sintering temperature.

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**3,837,911**

**MAGNETIC DEVICES UTILIZING GARNET EPITAXIAL MATERIALS AND METHOD OF PRODUCTION**

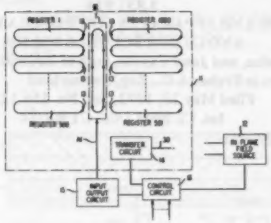
**Andrew Henry Bobeck, Chatham, Morris County; Hyman Joseph Levinstein, Berkeley Heights, Union County, and Larry Keith Shick, Bridgewater Township, Somerset County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.**

**Continuation-in-part of Ser. No. 133,361, Apr. 12, 1971, which is a continuation-in-part of Ser. No. 89,632, Nov. 16, 1970, abandoned. This application Oct. 29, 1971, Ser. No. 193,976**

**Int. Cl. H01f** *10/02*

**U.S. Cl. 117—235** **17 Claims**

Magnetic garnet compositions grown by liquid phase epitaxy have appropriate magnetic properties for use in bubble domain devices - a class of magnetic devices in which information is represented by enclosed domain regions of polarity opposite to that of immediately surrounding material. Critical selection of compositions, all containing mixed rare earth ca-




tions, as well as careful choice of processing conditions yield films which are both uniform in composition and dimension, as well as lacking in hillock formation and other surface irregularities.

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**3,837,912**

**ENVIRONMENTALLY STABLE IRON-BASED MAGNETIC RECORDING MEDIUM**

**John S. Roden, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Filed May 22, 1972, Ser. No. 255,260**

**Int. Cl. H01f** *10/02*

**U.S. Cl. 117—240** **6 Claims**

Environmentally stable magnetic recording medium comprising fine metal particles based on iron, cobalt, or nickel dispersed in a nonmagnetizable binder material, the particles having a chromium-based outer layer formed by exposing the particles to a solution containing dichromate or chromate ions under high-shear mixing conditions.

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**3,837,913**

**CONTINUOUSLY OPERATING CENTRIFUGE**

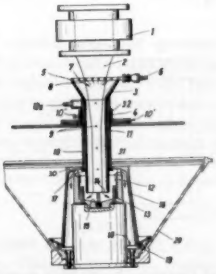
**Heinrich Hillebrand, and Helmut Schaper, both of Braunschweig, Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Amalien Bahnhof, Germany**

**Filed June 23, 1972, Ser. No. 265,575**

**Claims priority, application Germany, Feb. 18, 1972, 2207663**

**Int. Cl. B04b** *5/00, 11/00*

**U.S. Cl. 127—19** **7 Claims**



A sugar centrifuge is provided with a feed-in arrangement for sugar massecuite in which a massecuite stream falling through an inlet tube is sprayed with water. Steam is also circulated around the stream of massecuite whereby the latter is

exposed to steam jets. The massecuite falls into a distribution cup having vertical projecting mixing pins. An accelerating cone receives the massecuite from the cup and feeds it to the centrifuge proper.

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**3,837,914**

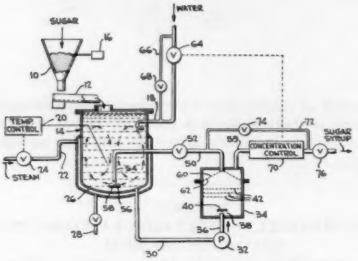
**METHOD AND APPARATUS FOR DISSOLVING SUGAR AND OTHER SOLUBLE SOLIDS**

**Angelo Cadeo, and Josef Cavelti, both of Rothrist, Switzerland, assignors to Frebar A.G., Zug, Switzerland**

**Filed May 23, 1972, Ser. No. 256,121**

**Int. Cl. B01f *1/00*; C13f *1/14***

**U.S. Cl. 127—22** **38 Claims**




A continuous method of, and apparatus for, forming a solution of a powdered solid, such as sugar, which involves introducing the solid and a solvent, such as water, into a first dissolving unit, continuously withdrawing a portion of the contents of the first unit into a second dissolving unit, continuously re-cycling the contents of the second dissolving unit back to the first dissolving unit and continuously withdrawing the resulting solution from the second dissolving unit. Each dissolving unit is provided with means, such as a nozzle and a splach plate, to impart a facilitating dissolving motion to the solution being transferred from one dissolving unit to the other.

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**3,837,915**

**PASSING ATOMIZED LIQUID THROUGH MAGNETIC FIELD FOR IMPROVED SPRAY WASHING**

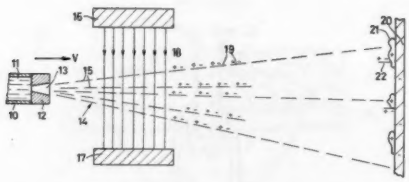
**Georg O. Erb, D-5241 Bindweide, Germany**

**Filed Nov. 6, 1972, Ser. No. 304,054**

**Claims priority, application Germany, Nov. 6, 1971, 2155278**

**Int. Cl. B08b *3/10, 3/02***

**U.S. Cl. 134—1** **10 Claims**



A method of cleaning objects such as surfaces of a vehicle and the like by passing a washing fluid, such as water, which may contain a washing agent, through an atomizing nozzle to form an atomized jet and then passing the atomized jet through a magnetic field which is preferably at right angles to the axis of the jet so as to induce voltages in the drops of the atomized jet and then impinging the jet against the surface to be cleaned so that the cleaning is more effective by equalizing the electrostatic charges bonding the dirt particles to the surface to be cleaned.

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**3,837,916**

**METHOD FOR PREVENTING LIVING THINGS SUCH AS MICROORGANISMS IN THE SEA FROM STICKING TO SUBMARINE EQUIPMENT BY SPRAYING WITH FRESH WATER**

**Toshio Omachi, No. 26-6, Oi 5-chome, Tokyo, Japan**

**Filed Sept. 25, 1972, Ser. No. 292,101**

**Int. Cl. B08b *3/04*; B63b *59/00***

**U.S. Cl. 134—34** **8 Claims**

Living things such as microorganisms in the sea water are kept from sticking or adhering to submerged outer surfaces such as transparent windows of submarine equipment such as submarine houses, submarine boats and tanks in the deep-sea as well as submarine illuminating devices so as to maintain proper transparency of the windows. The method comprises the step of supplying fresh water onto the surface of the transparent window exposed to the sea water so as to cause the continuous or intermittent flow of the fresh water over the surface in contact therewith thereby permitting the smell of fresh water to be maintained on the surface of the window exposed to the sea water. Since living things and microorganisms in the sea water dislike the smell of fresh water, the living things will not stick to or will leave the surface of the transparent window even though they stick thereto thereby permitting the transparent window to maintain proper transparency thereof.

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**3,837,917**

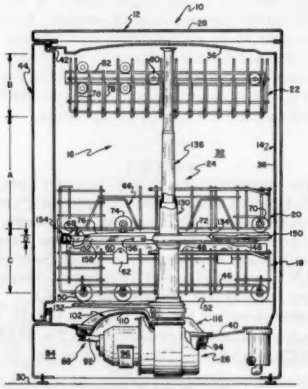
**DISHWASHER**

**Thomas E. Jenkins, and Donald S. Cushing, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.**

**Filed Jan. 2, 1973, Ser. No. 320,615**

**Int. Cl. B08b *3/02***

**U.S. Cl. 134—144** **9 Claims**



There is disclosed a front opening dishwasher of conventional cabinet height having lower, center and upper article

receiving racks. The effective height of the washing chamber has been increased by providing a rubber boot which directs liquid accumulating adjacent the tub bottom toward a pump inlet. The rubber boot allows lowering of the tub bottom thereby increasing effective wash chamber height. A spray system is provided for each of the racks in the wash chamber. A rotatable spray arm, between the lower and central spray racks, is prevented from contact with articles in the lower rack by an abutment which precludes movement of the lower rack into the wash chamber if an article therein protrudes into the path of spray arm movement.

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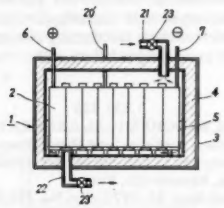
**3,837,918**

## SODIUM SULFUR STORAGE BATTERY

**Takashi Nakabayashi, Takatsuki City, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan**

**Filed Mar. 14, 1973, Ser. No. 341,089**
**Claims priority, application Japan, May 16, 1972, 47-47758**
**Int. Cl. H01m** *43/00*
**U.S. Cl. 136—6 FS** **3 Claims**




This invention relates to a novel sodium sulfur storage battery comprising a double vessel with thermal insulating layer therein and at least one unit cell, each unit cell containing a plurality of individual cells including sulfur as a cathodic reactant, sodium as an anodic reactant and a non-porous solid electrolyte. The storage battery is provided with a temperature control means. According to this invention, performance and durability of the soidum sulfur storage battery are highly improved.

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**3,837,919**

## PREPARATION OF CADMIUM ELECTRODES

**Ian Paul Gutrdige, Kingswinford, England, assignor to The International Nickel Company, Inc., New York, N.Y.**

**Filed Oct. 20, 1972, Ser. No. 299,355**
**Claims priority, application Great Britain, Oct. 26, 1971, 49669/71**
**Int. Cl. H01m** *35/30*
**U.S. Cl. 136—24** **5 Claims**

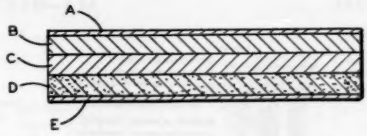
A process for producing negative active mass suitable for use in nickel-cadmium cells or similar cells or batteries which comprises electrically depositing cadmium hydroxide from an electrolyte containing cadmium cations and reducible anions such as nitrate anions and a small proporation of nickel cations. The negative active mass thus produced contains about 1 percent to about 10 percent of nickel, has excellent initial capacity and exhibits excellent retention of capacity after electrochemical cycling.

**3,837,920**

## A BATTERY CONTAINING A SOLID ELECTROLYTE HAVING CATIONIC DEFECTS

**Charles C. Liang, Andover, and Carl R. Schlaikjer, Arlington, both of Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.**

**Filed July 9, 1971, Ser. No. 161,016**
**Int. Cl. H01m** *11/00*
**U.S. Cl. 136—83** **6 Claims**




A solid electrolyte material comprises an alkali metal halide solid electrolyte matrix containing an additive therein for introducing defects into the matrix for increasing the ionic conductivity of the material.

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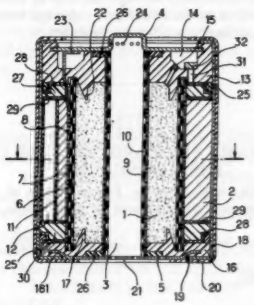
**3,837,921**

## STORAGE OXYGEN DEPOLARIZED CELL

**Hans Friedrich Henssen, Oberhochstadt, Germany, assignor to Compagnie Industrielle des Piles Electriques, Perret, France**

**Filed Aug. 3, 1972, Ser. No. 277,611**
**Claims priority, application Germany, Aug. 5, 1971, 2139227**
**Int. Cl. H01m** *27/00*
**U.S. Cl. 136—86 A** **12 Claims**




Storable air depolarization cell provided with an electrolyte-repellent porous positive electrode, a separator layer and a powdered negative zinc electrode. Spaces having walls that are permeable to gases and impervious to the electrolyte extend along the negative electrode and serve as gas collectors and communicate through valve means with an exhaust space in the upper part of the cell. Such a cell can be stored for a long time prior to use and is leakproof as to electrolyte.

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**3,837,922**

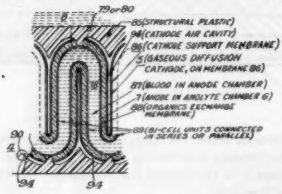
## IMPLANTABLE FUEL CELL

**Daniel Y. C. Ng, Chicago; Sidney K. Wolfson, Jr., Highland Park, and Anthony J. Appleby, Chicago, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.**

**Filed Sept. 12, 1969, Ser. No. 857,322**
**Int. Cl. H01m** *27/00, 27/30*
**U.S. Cl. 136—86 R** **7 Claims**

An implantable fuel cell power source for an artificial heart or pacemaker device which utilizes blood carbohydrates as

the anode fuel. The cathode of the implantable fuel cell is an oxygen utilizing cathode, and may be air breathing, for example, following being ventilated through a percutaneous airway by a balloon system. The fuel cell may be integrated as part of a heart pump prosthetic mechanism, or placed at some remote location where a portion of the venous blood can be diverted to the fuel cell on its way to the heart. The anode chamber of the fuel cell may form a portion of the atria or the blood collecting plenum of the heart pump, but preferably is placed at the outflow passage of the prosthetic heart pump right ventricle so that the pumping force provides enough power to overcome the resistance of both the anode and the pulmonary vascular bed. The anode is separated from the whole venous blood by a thin, porous membrane capable of passing a blood ultra-filtrate containing the oxidizable organics. The organics contact the catalyst anode which is preferably of a "felt" -type construction, with the ultra-filtrate at approximately neutral pH acting also as the electrolyte. The anode is backed by a similar membrane, on the obverse side of which is coated the cathode catalyst. The implanted fuel cell may be connected in parallel with an implanted storage battery to form a hybrid power system which gives a fuel cell - storage battery hybrid system an outstanding redundancy capability.

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**3,837,923**

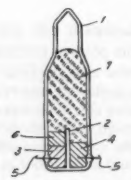
**TRANSPORTABLE STANDARD CELLS AND PROCESS FOR MAKING SAME**

**Corneliu Buzatu, and Costica Topor, both of Bucharest, Romania, assignors to Institutul de Metrologie, Bucharest, Romania**

**Filed Jan. 24, 1972, Ser. No. 219,970**

**Int. Cl. H01m** *17/04*

**U.S. Cl. 136—88** **2 Claims**




A standard cell adapted to withstand the rigors of transportation is made by introducing the cell components into respective components and packing the space bridging the components with a porous mass of glass or other inert particles to form a porous plug by vibrating the vessel or subjecting same to centrifugal force. The porous mass is then filled with electrolyte and the cell sealed.

**3,837,924**

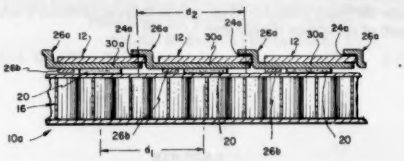
**SOLAR ARRAY**

**Wilfred R. Baron, Palos Verdes Peninsula, Calif., assignor to TRW, Inc., Redondo Beach, Calif.**

**Continuation of Ser. No. 148,386, June 1, 1971, abandoned. This application July 20, 1973, Ser. No. 381,105**

**Int. Cl. H01l** *15/02*

**U.S. Cl. 136—89** **3 Claims**




A solar array and method of its fabrication wherein the solar cells are attached to a supporting substrate and electrically joined by interconnects having end terminals attached to the cell contacts with predetermined center distances between adjacent cell-substrate attachment points and the terminal attachment points of each interconnect, such that during thermal cycling of the solar array, each interconnect and the portion of the substrate between the adjacent cell-substrate attachment points undergo substantially equal thermal expansion and contraction so as to virtually eliminate stressing and flexing of the interconnects and thereby eliminate the need for flexibility in and avoid fatigue failure of the interconnects.

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**3,837,925**

**ELECTROCHEMICAL GENERATORS**

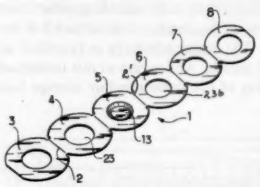
**Jean-Pierre Cailley, Ambares, and Henri Braun, Bouscat, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France**

**Filed Sept. 25, 1972, Ser. No. 291,905**

**Claims priority, application France, Sept. 29, 1971, 71.35029**

**Int. Cl. H01m** *13/10*

**U.S. Cl. 136—134** **18 Claims**




An electrochemical generator of the type embodying an electrode-separator assembly in which the electrodes of opposite polarity respectively project and outwardly from said assembly at different locations and have bared conductive portions to which current collectors are respectively conductively integrated, for example, by welding. The current collector is connected to the electric output terminal of like polarity by a strip of conductive material embodying a plurality of segments of a shape conforming substantially with the shape of the cross-sectional area of the assembly. Transverse scorings in the strip delineate the respective segments and permit folding of the segments. One segment of the strip has a depression to receive and retain a terminal therein as by welding or the like.

The other segments are each provided with centralized openings. The scorings results in permitting accurate reverse folding of the segments in overlying relationship.

3,837,926

## METHOD OF PRODUCING A CORROSION-RESISTING COATING ON METALLIC MOLYBDENUM SURFACES

Istvan Hangos; Laszlo Varkonyi; Jozsef Hodacs, and Neuhof-Suski, all of, Budapest, Hungary, assignors to Egyesult Izzolampa es Villamosagi Reszvenytarsasag, Budapest, Hungary

Filed July 31, 1972, Ser. No. 276,754

Claims priority, application Hungary, Sept. 14, 1971, EE 1950

Int. Cl. H01k 3/00

U.S. Cl. 148—6.3 6 Claims

Method of producing surface layers of bromide on molybdenum elements such as those used in incandescent halogen lamps. The surface of the molybdenum elements is degreased, the elements are heated in a stream of hydrogen at approximately 700°C for at least 10 minutes, and the elements are then treated with bromine-containing gas at about 1000°C for 10 minutes. Subsequently, the treated elements are cooled in a gas such as nitrogen.

3,837,927

## CHEMORESISTANT ELECTRODUCTIVE SUBSTANCE AND PROCESS FOR MAKING SAME

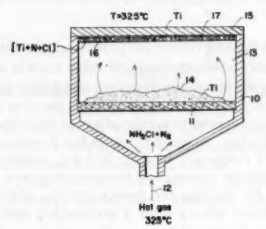
Heinz-Peter Fritz; Wolfram Treptow, both of Munchen, and Peter Faber, Kahl/Main, all of Germany, assignors to Rheinisch-Westfalisches Elektrizitatswerk A.G., Essen, Germany

Filed Aug. 7, 1972, Ser. No. 278,641

Claims priority, application Germany, Aug. 7, 1971, 2139722; May 10, 1972, 2222797

Int. Cl. C23f 7/00

U.S. Cl. 148—6.3 12 Claims




To produce an electronically conductive substance resistant to alkalies and acids, a metal from Group IVB, VB, VIB, VIIB or VIII of the Periodic Table -- especially titanium -- is reacted in a gaseous atmosphere free from water vapor and oxygen, at temperatures between about 325° and 650°C, with chloramine or with a combination of reactants (such as ammonia and carbon tetrachloride, chloroform or sulfuryl chloride) yielding the constitutents of the chloramine radical. The metal may constitute a solid body to be coated with the reaction product forming a protective layer thereon.

3,837,928

## CONVERSION COATING ON METAL

Alexander Robley Morrison, Caulfield, Victoria, Australia, assignor to Dulux Australia Ltd., Victoria, Australia

Filed Sept. 12, 1972, Ser. No. 288,338

Claims priority, application Australia, Oct. 5, 1971, 6526/71

Int. Cl. C23f 7/10

U.S. Cl. 148—6.15 Z 3 Claims

The quality of a crystalline zinc phosphate conversion coating deposited on a ferrous or zinciferous surface from an aqueous, acidic, non-gassing phosphating solution is improved by the addition thereto of a polymeric additive which is an addition copolymer of an unsaturated carboxylic acid and a selected ethylenic monomer.

3,837,929

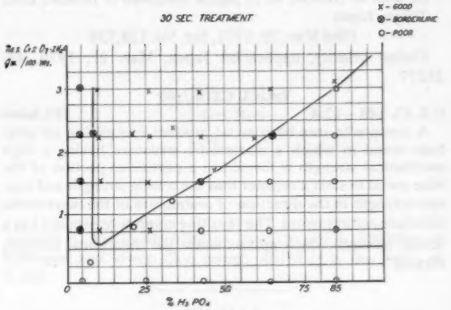
## METHOD OF PRODUCING TARNISH RESISTANT COPPER AND COPPER ALLOYS AND PRODUCTS THEREOF

Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 67,943, Aug. 28, 1970, Pat. No. 3,716,427, which is a continuation-in-part of Ser. No. 59,684, July 30, 1970, Pat. No. 3,677,828. This application Oct. 6, 1972, Ser. No. 295,685

Int. Cl. C23f 7/12, 7/26

U.S. Cl. 148—6.16 10 Claims




A method of producing a laminate having high bond strength and excellent resistance to acid undercutting comprising applying a phosphoric acid solution to copper or its alloys containing a dichromate, rinsing, drying and adhesively laminating to a plastic film. The instant case also teaches a method of producing a high tarnish resistant copper and copper alloy by so treating, as well as a flexible printed circuit characterized by high bond strength and the absence of acid undercutting.

3,837,930

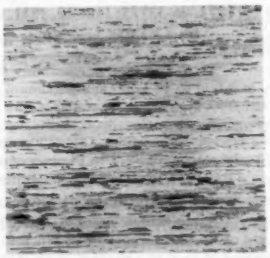
## METHOD OF PRODUCING IRON-CHROMIUM-ALUMINUM ALLOYS WITH IMPROVED HIGH TEMPERATURE PROPERTIES

Robert Lacock Cairns, and John Stanwood Benjamin, both of Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 218,404, Jan. 17, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,313

Int. Cl. B22f 3/18; C21d 7/19

U.S. Cl. 148—11.5 F 5 Claims



A powder metallurgy product comprising iron and chromium, and/or aluminum and characterized by elongated grains that are stable at elevated temperatures.

A method of producing such a product, including mechanically alloying a suitable powder charge, consolidating the mechanically alloyed powder, working the consolidated product so as to achieve therein a reduction of at least about 10 percent; and, then, heating the worked product to produce coarse elongated grains therein.

The product produced according to the present invention exhibits good oxidation resistance and good room temperature and elevated temperature strength and ductility.

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**3,837,931**

## COMPOSITE IRON-BASE METAL PRODUCT

**Tadashi Nemoto, Tokyo; Keiichi Kuniya, and Takeo Tamamura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan**

**Filed Mar. 29, 1971, Ser. No. 128,738**

**Claims priority, application Japan, Mar. 27, 1970, 45-25277**

**Int. Cl. C21d *1/00***

**U.S. Cl. 148—12.4** **13 Claims**

A composite iron-base metal product comprising an iron-base metal in which a martensitic structure having a high mechanical strength is formed in a particular portion of the base metal in such a manner that the tensile strength and rupture strength in the direction of orientation of the martensitic structure are improved. The resulting composite product has a tensile strength which approximates the theoretical strength thereof.

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**3,837,932**

## FLUXES FOR USE IN BONDING PLATES OF STORAGE BATTERIES TO CONNECTING STRAPS

**Lester Aronberg, Chicago, Ill., assignor to Lake Chemical Company, Chicago, Ill.**

**Filed Mar. 27, 1972, Ser. No. 238,609**

**Int. Cl. C23c *1/12***

**U.S. Cl. 148—23** **8 Claims**

Fluxes for use in forming a bond between the lugs of the positive and negative plates, or grids, of a storage battery, and the terminal post-bearing connecting straps thereof, which, in their preferred form, comprise an aqueous suspension of an organic, substantially water-insoluble polycarboxylic acid such as adipic acid, and a water-soluble binder exemplified by polyvinylpyrrolidone.

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**3,837,933**

## HEAT TREATED MAGNETIC MATERIAL

**Hakaru Masumoto, Sendai; Yuetsu Murakami, Miyagi, and Masakatsu Hinai, Natori, all of Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys**

**Filed Mar. 7, 1972, Ser. No. 232,551**

**Claims priority, application Japan, Mar. 13, 1971, 46-13518; May 19, 1971, 46-33773; June 10, 1971, 46-40546**

**Int. Cl. C04b *35/00***

**U.S. Cl. 148—31.55** **11 Claims**

Magnetic materials having high permeability such as initial permeability of 3,000 to 109,300 and maximum permeability of 5,000 to 461,000, high hardness of 150 to 359 high specific electric resistance, and excellent workability are produced by forming Ni-Fe-Nb alloy consisting of by weight 70 to 85.9 percent of Ni, 5 to 28 percent of Fe, 1 to 14 percent of Nb as main ingredients, and 0.01 to 10 percent of subingredients selected from the group consisting of by weight of 0 to 8 percent of Mo, 0 to 7 percent of Cr, 0 to 10 percent of W, 0 to 7 percent of V, 0 to 10 percent of Ta, 0 to 10 percent of Mn, 0 to 7 percent of Ge, 0 to 7 percent of Ti, 0 to 5 percent of Zr, 0 to 5 percent of Al, 0 to 5 percent of Si, 0 to 5 percent of Sn, 0 to 5 percent of Sb, 0 to 10 percent of Co and 0 to 10 percent of Cu and a small amount of impurities, the alloy being heated at a temperature more than 800°C in a non-oxidizing atmosphere or in vacuum for more than 1 minute to 100 hours corresponding to the composition and cooled to a room temperature from a temperature of more than the order-disorder transformation point of about 600°C at a suitable cooling speed of 100°C/second to 1°C/hour corresponding to the composition, whereby the degree of order is within 0.1 to 0.6 and a more excellent workability than Mo-Permalloy is obtained.

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**3,837,934**

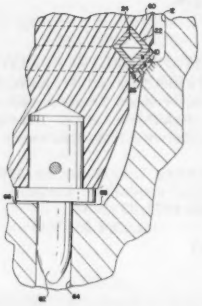
## METHOD FOR INDUCTIVELY HEATING VALVE SEATS

**George D. Pfaffmann, Farmington, and Michael R. Hammond, Detroit, both of Mich., assignors to Park-Ohio Industries, Inc., Cleveland, Ohio**

**Division of Ser. No. 151,494, June 9, 1971, Pat. No. 3,737,612. This application Sept. 8, 1972, Ser. No. 287,264**

**Int. Cl. C21d *1/10***

**U.S. Cl. 148—146** **3 Claims**



An induction heating device for inductively heating the first of a pair of closely positioned conical valve seats in an internal combustion engine block which device comprises an inductor having a generally circular shape matching the first valve seat, means for positioning the inductor adjacent the valve seat and spaced only slightly therefrom, a radio frequency power source having a frequency of over 250 Kc, means including two spaced leads for connecting the power source to the inductor, means for starting the power source, and means for stopping the power source after a preselected time whereby the valve seat is hardened by quenching from conduction to the engine block itself.

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**3,837,935**

## SEMICONDUCTOR DEVICES AND METHOD OF MANUFACTURING THE SAME

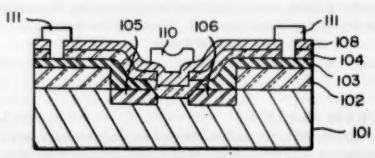
**Kazuo Maeda, Chigaski, and Kazunari Shirai, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan**

**Filed May 25, 1972, Ser. No. 256,753**

**Claims priority, application Japan, May 28, 1971, 46-3674; Aug. 12, 1971, 46-61134**

**Int. Cl. H01l *7/34***

**U.S. Cl. 148—187** **3 Claims**




A semiconductor device wherein a polycrystalline silicon layer, conductively in contact with a source region and a drain region and having impurities of the same conductivity type as

that of said source region and said drain region, is the lead out electrode of said source region and said drain region. The method of forming said semiconductor devices is also disclosed.

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**3,837,936**

**PLANAR DIFFUSION METHOD**

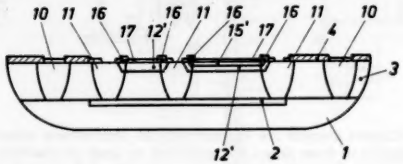
**Wolfgang Kraft, Freiburg im Breisgau, Germany, assignor to ITT Industries, Inc., New York, N.Y.**

**Filed Oct. 18, 1972, Ser. No. 298,724**

**Claims priority, application Germany, Nov. 20, 1971, 2157633**

**Int. Cl. H01l 7/44**

**U.S. Cl. 148—187** **4 Claims**




This invention relates to a method of producing diffusion zones in integrated circuits. A master diffusion mask contains all openings for emitter, base and insulation diffusion. The openings in the master mask are closed or opened, depending on the diffusion step being performed, by means of a masking layer of a material which is easier to etch than the master mask.

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**3,837,937**

**EXPLOSIVE COMPOSITIONS WITH COATED GASEOUS ENCAPSULATIONS**

**Richard Fox, Hawthorn, Victoria, and Howard William Tankey, Box Hill, Victoria, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia**

**Filed Nov. 29, 1971, Ser. No. 203,080**

**Claims priority, application Australia, Dec. 16, 1970, 3505/70**

**Int. Cl. C06b 19/00, 1/04, 11/00**

**U.S. Cl. 149—4** **10 Claims**

An explosive composition containing an inorganic oxidizer salt, a water soluble fuel, a metallic water insoluble fuel, water and sensitizing particles which contain encapsulated gas. The particles contain an additional fuel component which may be located either on the surface of the particles or within the encapsulating material itself. Part of the gaseous component is capable of reacting with the fuel component of the encapsulating particle.

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**3,837,938**

**SOLID PROPELLANT CONTAINING FUEL-OXIDIZER COMPONENT PREPARED FROM FUSED OXIDIZERS**

**Vernon E. Haury, Santa Susana, and David R. V. Golding, Malibu, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**

**Filed Aug. 19, 1965, Ser. No. 482,325**

**Int. Cl. C06b 19/00, 21/00; C06d 5/06**

**U.S. Cl. 149—17** **1 Claim**

A novel method for making a solid propellant fuel-oxidizer comprising heating a mixture of at least two solid inorganic oxidizers to the melting point of said mixture, mixing into the molten mixture a solid particulate propellant fuel, cooling the just formed oxidizer-fuel mixture, grinding said cooled mixture and then incorporating the ground oxidizer-fuel mixture into a solid propellant binder.

**3,837,939**

**SOLID COMPOSITE PROPELLANT COMPOSITIONS CONTAINING CARBOXY-TERMINATED POLYMERS**

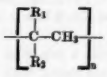
**Toshio William Nakagawa, San Jose, and Thomas P. Rudy, Saratoga, both of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.**

**Continuation-in-part of Ser. No. 375,648, June 16, 1964,. This application June 3, 1966, Ser. No. 554,966**

**Int. Cl. C06d 5/06**

**U.S. Cl. 149—19** **16 Claims**

A composite solid propellant composition employing as the binder the reaction product of a crosslinking agent and a carboxy-terminated polymer having a backbone of recurring structural units having the general formula:



wherein $R_1$ and $R_2$ are selected from the group consisting of hydrogen and lower alkyl groups and $n$ is in the range of 4–250.

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**3,837,940**

**IGNITOR CONTAINING POLYMERIC $NF_2$-ADDUCTS**

**Lawrence Spenadel, Fanwood, and John C. Reed, Westfield, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.**

**Filed Feb. 28, 1963, Ser. No. 262,292**

**Int. Cl. C06d 5/06**

**U.S. Cl. 149—19.3** **4 Claims**

1. An ignitor composition consisting essentially of 40 to 70 wt. percent of a solid oxygen-oxidizer and a solid $NF_2$-containing polymer in which $NF_2$ groups attached to carbon atoms give the polymer an $NF_2$ content of 40 to 70 wt. percent $NF_2$, said solid oxygen-oxidizer making available oxygen for reaction with carbon constituents and forming $N_2$ gas.

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**3,837,941**

**REACTION OF BERYLLIUM ALKYL COMPOUNDS WITH MIXTURE OF $B_2H_6$ AND $B_4H_{10}$**

**Louis R. Grant, Jr., Los Angeles, and Ross I. Wagner, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**

**Continuation-in-part of Ser. No. 690,704, Dec. 4, 1967, abandoned. This application June 26, 1969, Ser. No. 839,792**

**Int. Cl. C07f 5/02**

**U.S. Cl. 149—22** **3 Claims**

Process for producing mobile liquid beryllium hydride compounds comprising reacting a mixture of $B_4H_{10}$ and $B_2H_6$ with beryllium alkyl compounds.

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**3,837,942**

**LOW TEMPERATURE GAS GENERATING COMPOSITIONS AND METHODS**

**Vincent O. Catanzarite, Las Vegas, Nev., assignor to Specialty Products Development Corporation, Medina, Ohio**

**Continuation-in-part of Ser. No. 234,312, March 13, 1972, abandoned. This application Dec. 14, 1972, Ser. No. 314,916**

**Int. Cl. C06b 11/00**

**U.S. Cl. 149—83** **33 Claims**

A pyrotechnic powder composition comprising a mixture of an oxidizer powder and an oxygen bearing metal organic compound powder is used for inflating a passenger restraint bag for an automobile. Metals preferred for the metal organic

compound have a free energy of oxidation less than the free energy of oxidation of carbon monoxide. An exemplary composition comprises a mixture of anhydrous nickel formate and potassium chlorate. When these react, substantial volumes of oxygen, carbon dioxide and water vapor are released for inflating a passenger restraint bag. The burning rate of the powder composition may be increased by including up to about 20 percent of an enhancer distributed in the powder and having a burn rate substantially higher than the burn rate of the powder composition.

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**3,837,943**

## METHOD OF PRODUCING COMPOUND FABRICS

**Siegfrid Ploch, Karl-Marx-Stadt; Kurt Klinger, Leutersdorf, and Joachim Reif, Karl-Marx-Stadt, all of Germany, assignors to Forschungsinstitut Fur Textiltechnolgie, Karl-Marx-Stadt, Germany**

**Filed Oct. 5, 1972, Ser. No. 295,309**
**Int. Cl. B32b 7/08**
**U.S. Cl. 156—93** **3 Claims**

A method for producing a pile type fabric in which the pile or fleece is sewn on a base fabric with a stitching thread composed of materials having different thermal softening characteristics, so that one of the components bonds the thread to itself and to the base fabric. Another component may have heat shrinkable characteristics within the range of temperatures of the treatment.

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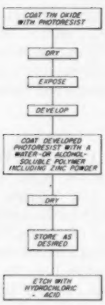
**3,837,944**

## SELECTIVE ETCHING OF METAL OXIDES OF TIN OR INDIUM

**Herbert S. Cole, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed Sept. 1, 1972, Ser. No. 285,601**
**Int. Cl. C23f 1/02**
**U.S. Cl. 156—4** **11 Claims**



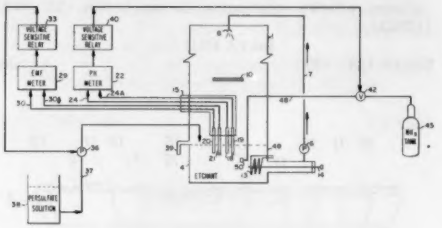

Metal oxides such as tin oxide and indium oxide are selectively etched by coating the surface to be etched with photoresist, selectively exposing the photoresist in a desired pattern and developing the photoresist to remove the unexposed areas. In the case of tin oxide, for example, the unprotected tin oxide and remaining photoresist are then coated with a water-or-alcohol-soluble polymer including powdered zinc, for example. The polymer solution with the zinc dispersed therein is then dried in an oven to remove residual solvent, leaving a uniform, tenacious film of zinc dispersed in the polymer. The tin oxide is then etched in a hydrochloric acid solution. The hydrochloric acid reacts with the zinc to produce atomic hydrogen which reduces the tin oxide to tin, which in turn is etched with the hydrochloric acid, thereby producing an etched pattern in the tin oxide.

**3,837,945**

## PROCESS OF ETCHING COPPER CIRCUITS WITH ALKALINE PERSULFATE AND COMPOSITIONS THEREFOR

**John Shu-chi Chiang, Mercerville, N.J., assignor to FMC Corporation, New York, N.Y.**

**Filed Mar. 22, 1972, Ser. No. 236,936**
**Int. Cl. C23f 1/02**
**U.S. Cl. 156—8** **9 Claims**




Copper circuits are etched with an ammoniacal aqueous solution of from about 0.4 mole/liter to limit of solubility of cupric amine sulfate maintained at a pH of 8–12 with ammonia, buffered with an ammonium salt and activated by a soluble peroxydisulfate whose concentration does not exceed about 0.4 moles/liter. Preferably, the cupric amine solution is used in a continuous process wherein automatic feed valves maintain ammonia concentration to provide a pH between 9.0 to 10.0 and peroxydisulfate concentration not in excess of 0.1 moles/liter. The feed valves are controlled by voltage sensitive relays. The output from a pH meter activates the relay for controlling ammonia feed while the EMF developed between a platinum and reference electrode immersed in the etchant, activates the relay for controlling peroxydisulfate feed.

The etchant composition exhibits low undercutting thereby rendering it especially suitable for fine line circuits and circuits resisted with noble metals such as gold/nickel.

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**3,837,946**

## MANUFACTURE OF PILE FABRICS

**Ronald Gribbin, Wells, Somerset, England, assignor to Clark, Son and Morland Limited, Glastonbury, Somerset and I.W.S. Nominee Company Limited, London, both of, England**

**Continuation of Ser. No. 793,050, Jan. 22, 1969, abandoned. This application Aug. 27, 1971, Ser. No. 175,752**
**Int. Cl. C14b 15/00**
**U.S. Cl. 156—68** **11 Claims**

Semi-artificial pile fabrics, having a fibrous pile of high density and with the fibres orientated as in natural pelts, are produced by first bonding the tips of the pile fibres of a woolled, furred or haired animal pelt to a temporary backing, leaving the remainder of the pile unbonded, cutting the pile from the skin, and bonding the cut ends of the pile fibres to a permanent backing, whereafter the temporary backing is removed. The temporary backing is preferably attached to the tips of the fibres by a relatively weak bond, so that it can be removed from the finished pile fabric by simply stripping off. If the pile is cut at a location between the temporary backing and the hide of the pelt, two pile materials are simultaneously

produced, one comprising the pile on the temporary backing ready for transfer to a permanent backing and the other comprising the residual pile on the original hide.

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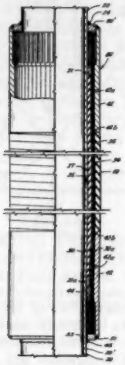
**3,837,947**
**METHOD OF FORMING AN INFLATABLE MEMBER**
**Billy C. Malone, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.**
**Filed May 1, 1969, Ser. No. 820,966**
**Int. Cl. E21b** *33/127*; **B29c** *27/00*
**U.S. Cl. 156—69** **18 Claims**



A method of forming or building up a reinforced inflatable member on a body wherein one end may be secured to the body with the other end movable relative to the body as the member is inflated, or wherein both ends of the inflatable member may be moved relative to the body as the member inflates. Also, the invention contemplates a relatively uncomplicated method of fabricating or forming an end anchorage for the ends of an inflatable member that is reinforced by a sheath within a minimum of space without sacrificing strength and which is able to withstand somewhat substantial stress or loads that may tend to try to pull out or shear the ends of the reinforced inflatable member.

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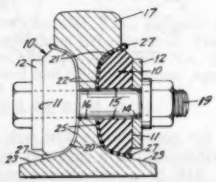
**3,837,948**
**METHOD OF FORMING ADHESIVELY BONDED RAIL JOINT**
**Alfred Dwayne Nelson, Stillwater, and Garold L. Goken, Birchwood, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.**
**Filed May 22, 1972, Ser. No. 255,613**
**Int. Cl. B32b** *31/20*
**U.S. Cl. 156—71** **2 Claims**



Method of forming adhesively bonded rail joint which is quick to assemble and easy to dismantle and reassemble. The face of each joint bar of the rail joint has a layer of thermoplastic adhesive which upon moderate heating adheres strongly under moderate pressure to conforming surfaces of the rail ends. Because the thermoplastic adhesive does not cure, the joint bars are easily separated from the rails by reheating the adhesive and can be reapplied or used as part of a new rail joint.

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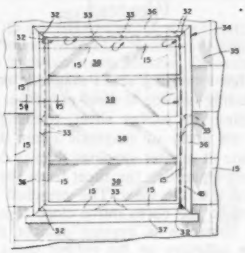
**3,837,949**
**METHOD FOR PREPARING WINDOWS FOR SPRAY PAINTING**
**Albert Edmund Eckart, Jr., Westport, Conn., assignor to Sapolin Paints, Inc., New York, N.Y.**
**Division of Ser. No. 206,722, Dec. 10, 1971, Pat. No. 3,743,150. This application Dec. 13, 1972, Ser. No. 314,649**
**Int. Cl. E04f** *19/08*
**U.S. Cl. 156—71** **4 Claims**



In preparing standard house window trim for spray painting, strips of adhesive-coating masking paper are formed by the use of a miter cut attachment on a supply roll of masking paper. Swallowtail cuts are produced in one end of each strip. Two overlapping strips are utilized on each of the four sides of a window to completely cover and protect the storm sash channel structure. Additional masking material may be applied to the surrounding house siding and to the glass of the main window sashes.

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**3,837,950**
**SURGICAL SPONGE**
**Harry G. Reimels, Braintree, Mass., assignor to Codman & Shurtleff, Inc.**
**Original application Feb. 17, 1971, Ser. No. 116,187, now Patent No. 3,736,935. Divided and this application Oct. 13, 1972, Ser. No. 297,583**
**Int. Cl. B32b** *31/20*
**U.S. Cl. 156—73** **5 Claims**

A surgical sponge useful for delicate surgical procedures is made by providing a strip of nonwoven fibers which are securely bonded against delamination, and bonding a plastic retrieval thread to the surface of the strip by heat-softening a portion of the thread to cause it to flow partially into the surface of the strip. The resulting sponge

may also have a band of radiopaque material bonded to its surface by heat-softening the plastic material of the band.

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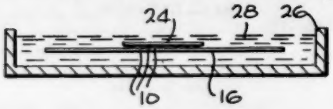
**3,837,951**
**METHOD FOR PRODUCING COMPACT MAGNETIC CORE ARRAYS**
**Niels Krag, Pacific Palisades, Calif., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.**
**Filed Oct. 25, 1972, Ser. No. 300,790**
**Int. Cl. H01f** *3/00, 41/02*
**U.S. Cl. 156—85** **10 Claims**




A method for mounting small magnetic cores at close spacings, including coating a sheet of rubber with an adhesive, stretching the rubber sheet, pressing the rubber sheet against an array of magnetic cores that are held in a cavity plate at greater spacings than is desired in the final array, and separating the sheet from the cavity plate so the cores stick to the sheet. The stretched rubber sheet is then relaxed so the cores move close together, an adhesive-coated substrate is pressed against the array of cores, and the adhesive on the rubber sheet is dissolved away so the cores are held only on the substrate.

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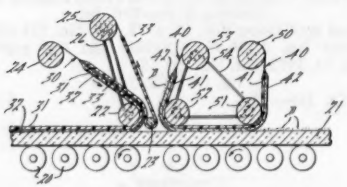
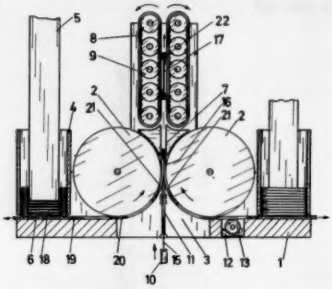
**3,837,952**
**PROCESS AND APPARATUS FOR FORMING A GLASS AND FILM LAMINATE**
**Edmund C. Mogford, 4287 Merwin Road, Lapeer, Mich. 48446**
**Continuation-in-part of application Ser. No. 345,643, Mar. 28, 1973. This application May 29, 1973, Ser. No. 364,928**
**Int. Cl. B32b** *17/06, 17/10*
**U.S. Cl. 156—99** **3 Claims**



Process and apparatus for laminating an adhesive coated laminate sheet having a removable protective sheet on a glass sheet with dust particles therebetween at a low commercially acceptable level, comprising, applying an adhesive coated dust particle collecting member to the glass sheet to adhere dust particles from the glass sheet to the adhesive coated member; removing the adhesive coated dust particle collecting member from the glass sheet with the dust particles previously on the glass sheet adhered to the adhesive coated dust particle collecting member; stripping the removable protective sheet from an adhesive coated laminate sheet adjacent the glass sheet and adjacent the removal of the adhesive coated dust particle collecting member from the glass sheet; and immediately applying the adhesive coated laminate sheet to the glass sheet.

**3,837,953**
**METHOD AND DEVICE FOR THE MANUFACTURE OF SLIDE FRAMES**
**Peter Florjancic, St. Martinstrasse 12, D–81 Garmisch-Partenkirchen, Germany**
**Filed Sept. 18, 1972, Ser. No. 289,931**
**Claims priority, application Austria, Sept. 22, 1971, A 8,199/71**
**Int. Cl. B32b** *31/00, 31/10*
**U.S. Cl. 156—108** **9 Claims**




The method and apparatus for the manufacture of slide frames wherein the frames constitute mask members formed as separate elements from elastically deformable material. The mask members are arranged in spaced stacks and intermittently fed toward one another to where they are engaged by rotating drums that move them over guiding prisms and into overlapping engagement with one another. A slide is fed through one of the guiding prisms and between the overlapping mask members contemporaneous with the joining of said mask members by said drums.

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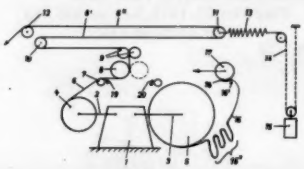
**3,837,954**
**PROCESS FOR CONNECTING EXPIRING FIRST WEB TO BEGINNING SECOND WEB**
**Gunter Nudinger, Heinrich Collin, and Hans Moosburger, Munich, Germany, assignors to Bayerische Berg-, Hutten- und Salzwerke AG, Munich, Germany**
**Filed June 16, 1972, Ser. No. 263,567**
**Claims priority, application Germany, June 16, 1971, P 21 29 903.6**
**Int. Cl. B65h** *19/00*
**U.S. Cl. 156—159** **6 Claims**



A process for connecting a first web of a web-shaped material unwinding from a first roll with the beginning of a second web of a web-shaped material unwinding from a second roll, the beginning of the second web being cemented to the unwinding first web by attachment of the beginning of the second web to a transfer element and then effecting a relative movement between the transfer element and the first web. More specifically, a cementing

occurs of the beginning of the second web to the transfer element by means of an adhesive area applied thereto. Thereafter, this area is accelerated to a lineal speed corresponding to the lineal speed of withdrawal of the expiring first web and in the same direction so that the loose initial region of the second web is simultaneously pulled tighter. The beginning of the second web is cemented to the first web by another adhesive area applied to the beginning of the second web on the side opposite the first mentioned adhesive area. The beginning of the second web is pulled away from the transfer element and thereafter the expiring first web is cut behind the point of cementation with the beginning portion of the second web. The second roll is accelerated by the tension exerted by the first web after the beginning of the second web has been cemented to the expiring first web. A yielding occurs to tension overloads and sudden loads exerted on the webs and the points of cementation between the web during initial acceleration by reason of the fact that the web is conducted over a forced storage means which yields under increased tension on the path of the web to further processing stations.

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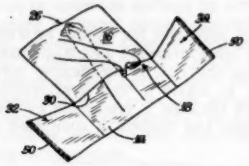
**3,837,955**
**METHOD OF MAKING A DISPOSABLE DIAPER HAVING AN INTEGRAL CONTAINER**
**Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company**
**Original application Feb. 1, 1971, Ser. No. 111,188, now Patent No. 3,731,689. Divided and this application Oct. 12, 1972, Ser. No. 296,982**
**Int. Cl. B32b** *31/02*
**U.S. Cl. 156—211** **4 Claims**



An improved self-containable disposable diaper wherein a portion of the disposal pouch is slit so as to form integral, oppositely extending wings, the wings preferably having means thereon for completing the attachment of the diaper to an infant. A method is provided for forming the improved diaper featuring folding, slitting and refolding the portion thereof which is to define the pouch and wings.

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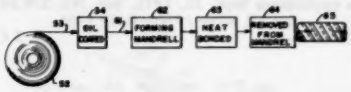
**3,837,956**
**PREPARATION OF PLASTIC-METAL PRODUCTS INCLUDING LAMINATES, COMPOSITE TUBES AND THE LIKE**
**Ransome W. Erwin, Houston, Tex., assignor to Austral-Erwin Engineering Co., Houston, Tex.**
**Original application May 28, 1970, Ser. No. 41,375, now abandoned. Divided and this application Apr. 21, 1972, Ser. No. 246,220**
**Int. Cl. B29d** *23/10*
**U.S. Cl. 156—218** **17 Claims**

This invention relates to the provision of novel and economical ways of: (1) Heat bonding, solely with heat, plastics, particularly the fluorocarbon polymers and specifically the polymer hexafluoropropylenetetrafluoroethylene manufactured exclusively by E. I. du Pont de Nemours & Company and sold under the trade name of FEP, to metal surfaces, particularly flexible metal sheets and plates. (2) Heat bonding or adhesive cement bonding these same metal sheet-plastic laminates to other metal surfaces, particularly those of pipes and vessels. (3) Fabrication of composite tubes or sleeves, solely by heat bonding of seams of these composite sheets shaped into tubes




or sleeves, said tubes or sleeves being useful alone as conduits for fluids or which may be heat or adhesive cement bonded to other metal pipes and vessels, as protective coats and liners, and method and means for installing said liners.

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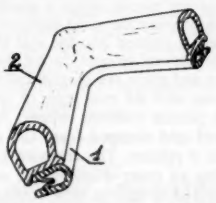
**3,837,957**
**METHOD OF SHAPING A SEALING STRIP**
**Francois Pierre Mesnel, Neuilly-sur-Seine, France, assignor to Etablissements Mesnel, Colombes, France**
**Filed Apr. 28, 1972, Ser. No. 248,731**
**Int. Cl. B29c** *23/00, 27/00*
**U.S. Cl. 156—221** **10 Claims**



In a method of shaping a sealing strip, which comprises a fixing section of plastics material and a sealing section of vulcanisable elastomeric material, to fit around a panel such as a vehicle door, the sealing section is only partially vulcanised after formation thereof and the sealing strip is constrained to a desired shape conforming to the panel and the strip heated to complete vulcanisation of the sealing section and to soften the plastics material of the fixing section so that the strip takes up and permanently retains the shape to which it has been constrained.

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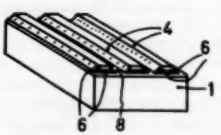
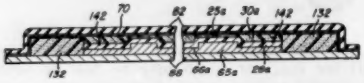
**3,837,958**
**METHOD OF MANUFACTURING A GAS DISCHARGE PANEL**
**Johannes Van Esdonk, Godefridus Henricus Broers, Petrus Franciscus Antonius Haans, and Johannes Petrus Hornman, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**
**Filed June 22, 1972, Ser. No. 265,328**
**Claims priority, application Netherlands, June 29, 1971, 7108935**
**Int. Cl. B32b** *31/00*
**U.S. Cl. 156—229** **7 Claims**



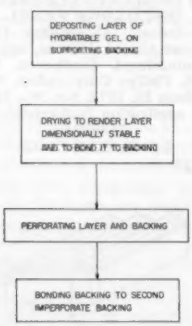
A gas discharge panel in which the conductors of the base plate and the upper plate are connected to said base plate and upper plate by means of an enamel.

3,837,959
**METHOD OF MAKING FLEXIBLE MAGNETIC PRINTING PLATES**
Homer L. Bishop, P.O. Box 35, West Carrollton, Ohio 45449
Continuation-in-part of application Ser. No. 194,651, Nov. 1, 1971, now Defensive Publication No. T903,017. This application Sept. 21, 1972, Ser. No. 290,852
Int. Cl. B29c *19/00*; B41c *3/06*
U.S. Cl. 156—246 7 Claims



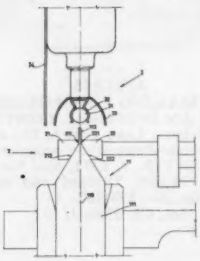

A flexible resilient printing plate adapted for use on a magnetic printing cylinder is formed by mixing a ferrous metal powder within a volume of liquid plastisol, casting the mixture onto a face layer of cured plastisol to form a base layer, and then heating the combined layers to cure the base layer and fuse it to the face layer to form a flexible multiple layer mold sheet. The base layer is shaved to provide the mold sheet with a substantially uniform thickness, and a porous fibrous impression mat is placed in contact with the face layer. The mat and mold sheet are heated and are placed within a diaphragm press with a porous cloth between the mold sheet and the diaphragm. The mold sheet is pressed into the mat to form a printing plate which is allowed to cool during the pressing operation. The mat and plate are magnetically retained on the bed of a shaver, and the base layer of the plate is shaved to produce a precise uniform caliper. After the printing plate is shaved and stripped from the porous mat, it is reheated until it relaxes. The reheated plate is placed on a drum having an outer diameter the same as the magnetic cylinder and is held in firm contact with the drum until the plate cools. The plate is also produced without the face layer of plastisol so that the metal powder is dispersed throughout the entire plate.

3,837,960
**METHOD OF MAKING HYDRATABLE GEL SHEETS**
Donald W. Renn, Glen Cove, and Ronald D. Forget, Owls Head, Maine, assignors to Marine Colloids, Inc., Rockland, Maine
Filed June 9, 1972, Ser. No. 261,154
Int. Cl. B32b *31/00*
U.S. Cl. 156—253 3 Claims


DEPOSITING LAYER OF HYDRATABLE GEL ON SUPPORTING BACKING
DRYING TO RENDER LAYER DIMENSIONALLY STABLE AND TO BOND IT TO BACKING
PERFORATING LAYER AND BACKING
BONDING BACKING TO SECOND IMPERFORATE BACKING

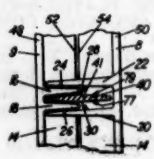
Hydratable gel sheets for use in molecular diffusion processes are made by depositing a layer of hydrated gel material on a water-impervious supporting backing, drying the layer to render it dimensionally stable and to cause it to become bonded to the backing, perforating the layer and the backing in the dry state and then bonding the backing to a second imperforate backing.

3,837,961
**METHOD AND APPARATUS FOR THE CLOSING BY TRANSVERSE WELDING OF FLEXIBLE TUBES MADE OF METAL-THERMOPLASTIC LAMINATE**
Jean-Marie Vouillemin, Ste.-Menehould, France, assignor to Tuboplast-France, Paris, France
Filed Mar. 19, 1973, Ser. No. 342,689
Claims priority, application France, Mar. 23, 1972, 7210240
Int. Cl. B29c *27/04*; H05b *9/02*
U.S. Cl. 156—272 2 Claims



Method and apparatus for closing by transverse welding of flexible tubes formed of a metal-thermoplastic laminate, in which the end of the flexible tube is gripped in a manner to create a transverse rectilinear closure zone, in which the zone is pre-heated by the application of external heat and welding is completed by induction heating.

3,837,962
**METHOD OF ASSEMBLING HONEYCOMB STRUCTURES**
James Joseph Ansell and Kenneth Gordon Payne, Bristol, England, assignors to Rolls Royce (Composite Materials) Limited, Bristol, England
Filed May 9, 1968, Ser. No. 734,842
Claims priority, application Great Britain, May 11, 1967, 22,001/67
Int. Cl. B32b *31/12*
U.S. Cl. 156—293 5 Claims




A lightweight, load-bearing honeycomb structure is formed by juxtaposing on a base pair of units each having projecting webs which overlap each other, applying within and between the overlapped webs a predetermined quantity of plastic adhesive, and inserting within the space a connecting member having a stem which presents bonding

surfaces opposite bonding surfaces of the units to a degree sufficient to force the adhesive in the space between all abutting bonding surfaces of the interconnecting member and the units.

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3,837,963
**COMPOSITION AND PROCESS FOR SEALING SURFACES**

**Elliott Frauenglass, Newington, and Bruce D. Murray, East Hartford, Conn., assignors to Loctite Corporation, Newington, Conn.**

**No Drawing. Filed Oct. 18, 1971, Ser. No. 190,261**
**Int. Cl. C08f** *3/64;* **C09j** *5/04*
**U.S. Cl. 156—310** **14 Claims**

Two part sealant compositions for use on rigid surfaces are presented, which combine effective sealing capability with ease of disassembly. A pretreating composition containing a film forming substance and a polymerization catalyst is applied to the surfaces to be sealed, and serves to activate the hardenable sealant when applied and also to reduce adhesion of the sealant to the surfaces to aid in disassembly.

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3,837,964
**BENZOTRIAZOLE PRE-LAMINATION TREATMENT OF METAL SUBSTRATES**

**Joseph Bernard Cotton, Sutton Coldfield, and Peter Albert Mack and Raymond Price, Manchester, England, assignors to Imperial Chemical Industries Limited, London, and Imperial Metal Industries (Kynoch) Limited, Birmingham, England**

**No Drawing. Filed Jan. 17, 1972, Ser. No. 218,457**
**Claims priority, application Great Britain, Jan. 18, 1971, 2,279/71**
**Int. Cl. B32b** *31/12;* **C09j** *5/02*
**U.S. Cl. 156—331** **7 Claims**

Organic compounds, especially polymers, are bonded to copper, silver or cadmium surfaces by means of compounds containing a ligand group, especially a benzotriazole group, which will form a polymeric complex with the metal of the surface and a group reactive with the organic compound. The metal surface may be treated with the complex-forming compound before or during contact with the organic compound. The polymers may be prepared from polymer-forming components while in contact with the metal surface.

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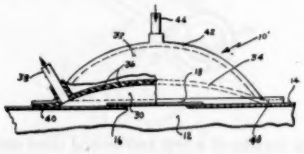
3,837,965
**PORTABLE REPAIR APPARATUS**

**John Mahon, Huntington, and Stanley J. Richter, Blue Point, N.Y., assignors to the United States of America as represented by the Secretary of the Air Force**

**Filed Oct. 17, 1972, Ser. No. 298,209**
**Int. Cl. B32b** *35/00*
**U.S. Cl. 156—382** **2 Claims**

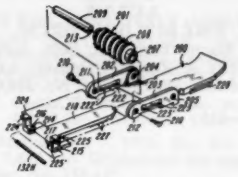


A portable repair apparatus having a pair of chambers separated by a flexible diaphragm having a heating element therein. One chamber has a connection to an evacuating means while the other chamber is connected to a pressure source. After mounting the repair apparatus over a patch on the damaged area of a surface, the creation of a vacuum in one chamber and the increase in pressure in the other chamber causes the flexible diaphragm to apply sufficient pressure to the patch in order to bond it to the damaged surface.

3,837,966
**LABEL PRINTING AND APPLYING APPARATUS**

**Eugene W. Finke, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio**

**Filed Feb. 25, 1972, Ser. No. 229,383**
**Int. Cl. B32b** *35/00*
**U.S. Cl. 156—384** **16 Claims**



There is disclosed label printing and applying apparatus comprising a platen and cooperable printing means for printing successive pressure sensitive labels, a delaminator for delaminating the printed labels successively from the associated web of supporting material, and an applicator for applying the printed delaminated labels to merchandise. The positional relationship of the delaminator relative to the platen and to the applicator can be quickly and easily varied by means of a resilient locking arrangement. Also disclosed are various embodiments of the applicator in the form of roll structure which is capable of yielding to conform to irregularities in the surface to which the label is applied.

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3,837,967
**APPARATUS FOR THE APPLICATION OF A SINGLE STRIP TREAD TO A CARCASS**

**Lester M. Symons, Southfield, Mich., assignor to Uniroyal, Inc., New York, N.Y.**

**Original application Aug. 13, 1970, Ser. No. 63,407, now abandoned. Divided and this application Oct. 19, 1972, Ser. No. 298,919**
**Int. Cl. B29h** *17/02, 17/08, 17/10*
**U.S. Cl. 156—405** **4 Claims**

An apparatus for applying an endless single strip tread to the carcass of a tire in either toroidal or flat built unshaped form. An uncured rubber strip of tread material is applied to the tire carcass in substantially parallel, spaced, spiral convolutions by moving a movable conveyor assembly and the supply source for the tread material in a direction parallel to the axis of the tire carcass itself. The movement is in one direction only during application of the strip, and a constant step-off of the strip as it is applied to the tire carcass is obtained by control means which permit the speed of transverse travel of the conveyor assembly and the rotational speed of the tire carcass to be controlled according to a predetermined formula so that the tread is applied to the tire in a single pass of the movable conveyor and tread stock supply source. The apparatus also includes means for returning the conveyor assembly to its starting position automatically following completion of application of the strip to the tire. The apparatus also includes provision of a hump stock let-off device which can be utilized when a "valley" type tread contour is required. A stitcher is also utilized to

stitch down the tread stock during the time that the device moves relatively of the tire body, and finally the method and apparatus is utilizable with any conventional tire-building machine or recapping machine, since the method and apparatus disclosed herein is utilizable either in applying a tread to a new tire carcass or in retreading a used tire.

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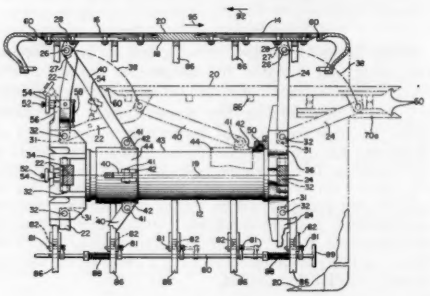
**3,837,968**
**TIRE BUILDING DRUM**
**Theodore F. Marra, Barberton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Filed Nov. 20, 1972, Ser. No. 308,063**
**Int. Cl. B29h** *17/16*
**U.S. Cl. 156—415** **25 Claims**



A tire building drum particularly adapted for massive tires such as those used in off-the-road construction equipment features four axially symmetrically collapsible segments each comprising a primary member and a pair of secondary members hinged about the longitudinal edges of the primary member to swing between positions cooperating to provide a continuous rigid cylindrical tire building surface and collapsed positions wherein the secondary members are swung beneath the respective primary members and wholly within the sector defined by the respective primary members.

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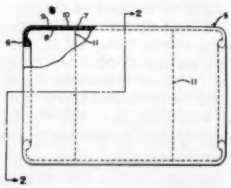
**3,837,969**
**METHOD OF MAKING A TIRE BUILDING SLEEVE AND SAID SLEEVE**
**Stanley M. Mezynski, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio**
**Continuation of abandoned application Ser. No. 767,325, Oct. 14, 1968. This application Mar. 29, 1972, Ser. No. 239,121**
**Int. Cl. B29h** *17/16*
**U.S. Cl. 156—416** **5 Claims**



This invention relates to a method of making sleeves or bladders for tire building machines for building bias angle tires, bias belted tires or radial ply belted tires by building the core of the sleeve of natural rubber, high cis polybutadiene, high cis polyisoprene, acrylonitrile-butadiene and butadiene styrene, and covering the outside of the core and at least part of the inside thereof with a layer of polyurethane elastomer.

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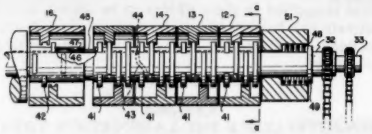
**3,837,970**
**APPARATUS FOR PRODUCING CONTINUOUS LENGTHS OF REINFORCED PLASTIC PIPE**
**Joseph Medrano, Jr., 14804 Daley Lane, Woodbridge, Va. 22191**
**Filed Sept. 20, 1972, Ser. No. 290,601**
**Int. Cl. B31c** *3/00*
**U.S. Cl. 156—425** **6 Claims**



This invention is a method and apparatus for producing continuous lengths of reinforced plastic pipe from rolls of reinforced plastic tape wherein a special mandrel is employed. The pipe wall is built-up by winding tape about the mandrel and the wound piping is moved off the mandrel by means of a programmed axial movement of at least one mandrel section with a coordinated expansion and contraction of selected sections of the mandrel.

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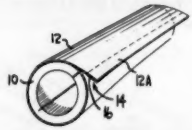
**3,837,971**
**APPARATUS FOR WRAPPING MOLDED PIPE INSULATION**
**Carl A. Beck, Bala-Cynwyd, Pa., assignor to Certain-Teed Products Corporation, Valley Forge, Pa.**
**Application July 6, 1971, Ser. No. 159,776, now abandoned, which is a division of application Ser. No. 887,197, Dec. 22, 1969, now Patent No. 3,658,614. Divided and this application Jan. 22, 1973, Ser. No. 325,279**
**Int. Cl. B65c** *9/06;* **B26d** *5/00;* **B65h** *81/00*
**U.S. Cl. 156—447** **1 Claim**



Selected lengths of a first and second sheet material are advanced from their respective sources to a location and in such sequence where one of the materials is above a portion of the other. The upper material has an adhesive side opposed to the lower material. The selected lengths are severed simultaneously, which severing step also at least initially adheres the material together. Glue strips are placed on selected portions of the composite and registry is then made with a length of molded pipe insulation. The insulation is wrapped with the composite covering, the portion having the second strip being part of a flap for subsequent use in securing the insulation around the pipe.

## 3,837,972

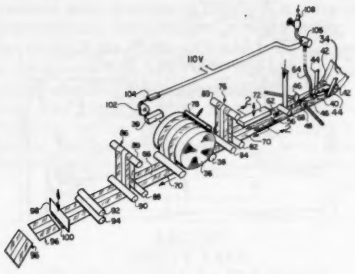
## PLASTIC BAG-MAKING MACHINE

Samuel J. Schuster, 1099 Hillside St., Monterey Park, Calif. 91754

Filed Apr. 12, 1972, Ser. No. 243,393

Int. Cl. B29d *23/10*; B30b *15/34*

U.S. Cl. 156—466 3 Claims



An improved bag making machine is disclosed having a rotatable bag stock feed drum and employing a pressure heat seal means operatively associated with a plate mandrel about which the bag stock is formed. The plate mandrel includes an air conduit having an inlet port adapted to be intermittently connected to a supply of pressurized air in timed relation with the rotation of the feed drum. The air conduit further has an outlet port and the air intermittently discharging thereform urges the bag stock away from the plate mandrel preventing the bag stock from sticking to the mandrel. The machine also includes roller compensator means between the feed drum and the plate mandrel to adjust the relative positions of transverse and longitudinal pressure heat seals.

## 3,837,973

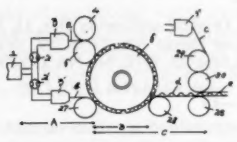
## APPARATUS FOR CONTINUOUSLY PRODUCING CORRUGATED PLASTIC BOARD

Hiroshi Asakura, Kanagawa-ken, and Keisuke Sakai, Masaru Koyama, and Hironori Mizuguchi, Kamakura, Japan, assignors to Toyo Kagaku Kabushiki Kaisha, also known as Toyo Chemical Co., Ltd., Kamakura, Japan

Filed July 7, 1972, Ser. No. 269,887

Int. Cl. B32b *31/00*

U.S. Cl. 156—470 6 Claims



A continuous plastic material shaping apparatus of the type in which a revolving drum having an undulating mold and suction orifices at its periphery against which a plastic material sheet to be shaped is brought to be fed and sucked by vacuum suction through the orifices connected with the interior of the drum which is kept under vacuum, the improvements being that on side edges of the periphery are provided flanges so arranged that the peripheral surface thereof may be on the same level as the convex crest of the undulations of the mold, with each flange having slot or groove therearound with orifices therein, through which orifices vacuum suction is effected. By means of the improved apparatus plastic materials to be shaped are sealingly retained on the peripheral surface of the mold and on the flanges so that a vacuum molding process may be carried out without vacuum leakage.

## 3,837,974

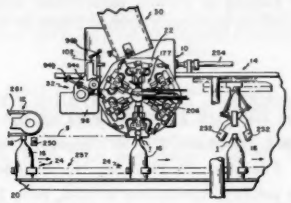
## APPARATUS FOR ADHESIVELY APPLYING SEALING STRIPS TO CONTAINER CLOSURES TO PREVENT UNAUTHORIZED REMOVAL OF THE CLOSURES WITHOUT DETECTION

Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Cleveland, Ohio

Original application Oct. 7, 1970, Ser. No. 78,652, now Patent No. 3,673,043. Divided and this application Mar. 27, 1972, Ser. No. 238,159

Int. Cl. B65c *3/20, 9/00*

U.S. Cl. 156—489 34 Claims



Apparatus for adhesively applying sealing strips, for example, tax stamps, to the closures at the tops of containers comprising a wheel rotatable about a horizontal axis which has on it at spaced intervals grippers for clamping the sealing strips at one end thereto and affixing assemblies for applying sealing strips to the closures following application of adhesive thereto. Peripherally of the wheel there are at the top, a magazine for holding sealing strips and a picker for taking sealing strips from the magazines and presenting them to the grippers on the wheel; at one side adhesive-applying means for applying adhesive to the sealing strips; and at the bottom a conveyor for moving containers in succession to the wheel for application of the sealing strips thereto. The affixing assemblies comprise holding members which take hold of the ends of the sealing strips while still held at one end by the gripper and a spotter. The holding members and spotter are movable radially on the wheel toward the tops of the containers and relative to each other after a sealing strip is pressed against the top of a container to wipe the portions of the sealing strip at each side of the closure downwardly against the sides while holding the ends away from the container so that the ends will not become attached to the shoulders of the container.

## 3,837,975

## APPARATUS AND METHOD FOR FEEDING AND PLACING ELONGATED FLEXIBLE STRIP MATERIAL

Ronald P. Mandich, Green Bay, and David L. Middleton, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

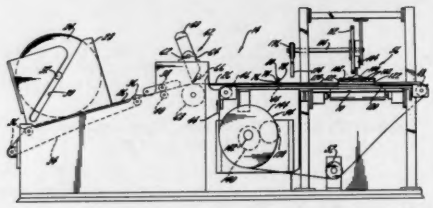
Filed Feb. 22, 1972, Ser. No. 228,047

Int. Cl. B32b *31/00*; B65c *11/04*

U.S. Cl. 156—513 6 Claims

Apparatus for feeding and placing elongated flexible strip material on a generally transversely moving base

sheet is disclosed. The apparatus transversely feeds elongated strip material, such as a thin, flexible belt for a surgical gown or the like, across the line of travel of the base sheet to which it is to be applied, separates the material into predetermined blanks and applies the length of



the material to the base sheet. Since the length of the material may exceed the repeat length of the base sheet to which it is applied, provision is made for varying the speed of feeding to prevent interference with the trailing edges of the previously applied length of material.

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**3,837,976**

## APPARATUS FOR APPLICATION OF STIFFENING BANDS OR THE LIKE TO PIECES OF CLOTH

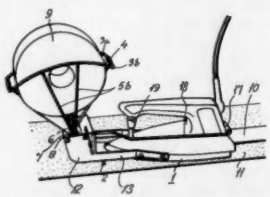
**Mats I. Davidsson, 510 50 Dalsjofors, Sweden**

**Filed June 20, 1972, Ser. No. 264,440**

**Claims priority, application Sweden, June 21, 1971, 8,012/71; Germany, Oct. 14, 1971, P 21 51 124.0**

**Int. Cl. B32b** *31/00*

**U.S. Cl. 156—513** **5 Claims**



An apparatus for applying stiffening bands to pieces of cloth uses bands with a covering that sticks to the cloth material upon heating and consists of a bracket secured to a smoothing iron and holding the band, a guide to feed the band in a path down towards the piece of cloth and in a direction towards the rear of the iron and a feeding roll having sharp points adapted to pierce the band and penetrate into the cloth lying below in such a manner that the iron upon movement causes the feeding roll to rotate and thereby feeds the stiffening band.

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**3,837,977**

## ULTRASONIC PATTERN WELDING APPARATUS

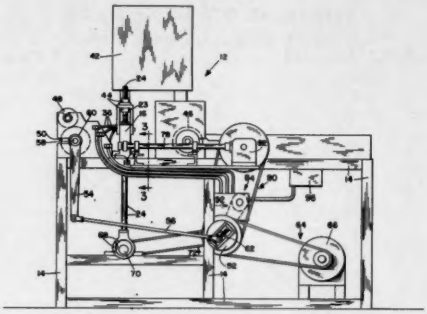
**Edgar C. Rust, Jr., Williamstown, Mass., assignor to Crompton & Knowles Corporation, New York, N.Y.**

**Filed Sept. 15, 1972, Ser. No. 289,508**

**Int. Cl. B06b** *3/00*

**U.S. Cl. 156—580** **13 Claims**

Apparatus for ultrasonic welding of thermoplastic sheets wherein a plurality of spaced anvils cooperate with a vibration transmitting member to produce welds in the sheets in a predetermined pattern. The apparatus includes



control means for selectively moving the anvils into cooperative position with the vibration transmitting member.

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**3,837,978**

## BARIUM ALUMINOSILICATE GLASS-CERAMICS

**Robert A. Busdiecker, deceased, late of Woodville, Ohio, by Lucille I. Busdiecker, executrix, Woodville, Ohio, assignor to Owens-Illinois, Inc.**

**No Drawing. Filed Apr. 2, 1973, Ser. No. 347,389**

**Int. Cl. B44f** *1/00;* **C03b** *29/00;* **C04b** *33/00*

**U.S. Cl. 161—1** **9 Claims**

Disclosed are thermally crystallizable barium aluminosilicate glass compositions containing tin oxide as a nucleant for in-situ thermal crystallization to yield transparent, translucent and opaque glass-ceramic articles containing hexacelsian as the principal crystalline phase and having a coefficient of thermal expansion in the range of from about 50 to $170\times10^{-7}$/° C. (0–300° C.).

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**3,837,979**

## VISIBLE IMMOBILIZED SPECIMENS AND METHOD OF PREPARING SUCH SPECIMENS

**John H. Brown, Jr., and Bobby L. Atkins, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.**

**No Drawing. Original application Dec. 11, 1969, Ser. No. 884,344, now Patent No. 3,638,709. Divided and this application Sept. 23, 1971, Ser. No. 183,231**

**Int. Cl. A01m** *1/00, 3/00*

**U.S. Cl. 161—18** **5 Claims**

A visible immobilized specimen suspended in a stable, continuous gel wherein the gel is a transparent adduct of a crosslinked vinyl polymer and a water-soluble aldehyde. Such immobilized specimen is prepared by providing an optically transparent container, introducing into the container a liquid phase containing a water-soluble vinyl monomer, a water-soluble aldehyde, a crosslinking agent and a free radical producing catalyst. A specimen is positioned in the liquid phase and held in position until the polymerization of the liquid phase produces sufficient gel strength to immobilize the specimen. The container is then sealed to prevent evaporation.

3,837,980
GRASS-LIKE PILE PRODUCT
Tadashi Nishimura, Kyoto, Yoshifumi Nakayama, Kusatsu, and Shigeji Yamashita, Kogacho-Ueno, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed June 8, 1973, Ser. No. 368,250
Claims priority, application Japan, June 14, 1972, 47/69,324
Int. Cl. A47g *35/00*
U.S. Cl. 161—21 28 Claims

Synthetic grass products of improved quality are made of thermoplastic monofilament ribbons having a cross section in which the ribbons are thickest at the center, and taper off toward both edges and which have a stem-like projection about its center on both sides of the tapered portion. The synthetic grass products are produced by conventional tufting, weaving, knitting, or flock-coating techniques and have resilient synthetic foam attached to the backing on the side opposite to the extending ribbons.

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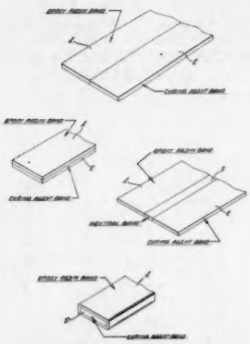
3,837,981
EPOXY TAPE
Theodore R. Flint, Jug Hollow Road, Valley Forge, Pa. 19481
Continuation-in-part of application Ser. No. 141,664, May 10, 1971, now Patent No. 3,708,379. This application Nov. 2, 1972, Ser. No. 303,146
The portion of the term of the patent subsequent to Jan. 2, 1990, has been disclaimed
Int. Cl. B32b *27/38;* C09j *5/08, 7/02*
U.S. Cl. 161—36 5 Claims



An epoxy tape useful as an adhesive sealant comprised of a first band of an uncured epoxy resin composition and a second band comprised of a composition capble of curing the epoxy resin. Kneading together of substantially equal lengths of opposed portions of the first and second bands results in an epoxy composition which is self-curing.

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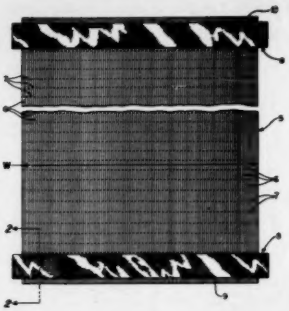
3,837,982
WIRE WOVEN FABRIC FOR PNEUMATIC TIRES
Samuel J. Di Paola, Burton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Original application Sept. 3, 1970, Ser. No. 69,195, now abandoned. Divided and this application May 22, 1972, Ser. No. 255,351
Int. Cl. B32b *7/00*
U.S. Cl. 161—39 17 Claims

A fabric for reinforcing pneumatic tires conventionally woven from metal warp cords composed of individual wires or filaments having a diameter greater than .003 inches, and weft cords composed of non-metallic material. A tabby, preferably composed of square woven textile



cord fabric, is cemented along the leading and trailing edges of the wire cord fabric for maintaining the width of the wire cord fabric uniform throughout its length.

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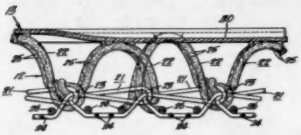
3,837,983
SIMULATED LEATHER FABRIC
Wolfgang A. Strahl, Souderton, and Donald S. Nichols, Doylestown, Pa., assignors to Koracorp Industries, Inc.
Continuation of abandoned application Ser. No. 802,755, Feb. 20, 1969. This application Apr. 20, 1971, Ser. No. 135,707
Int. Cl. B32b *5/02;* D06r *3/04*
U.S. Cl. 161—53 10 Claims



A simulated leather fabric which is characterized by a random grain appearance in which the fabric comprises a base structure having projections from at least one surface, for example, a tricot knit having at least two yarn systems, at least one of which comprises thermoplastic yarns capable of assuming a "set," and is knit with conventional yarn tension during the knitting operation. The other system is overfed during the knitting operation to provide projections in the nature of a looped pile on one surface of the fabric. The base fabric is tensioned and given a partial or temporary set to impart latent contractile forces thereto, and then is coated with a thin stabilized film of flexible material of uniform thickness on the surface containing the projections. The coating is bonded to the fabric and the coated fabric is then further treated while relaxed to activate the latent forces which thereupon develop a random grain appearance which simulates the appearance of natural leather.

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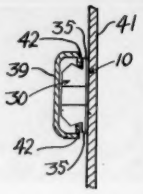
3,837,984
THERMOSETTING ADHESIVE AND ARTICLES USING THE SAME
David P. Wagner, Elmhurst, and James E. Gugle, Crystal Lake, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 19, 1972, Ser. No. 219,046
Int. Cl. B32b *5/12*
U.S. Cl. 161—53 7 Claims

Disclosed is a thermosetting adhesive which is formed of a nitrile phenolic and applied in slurry form onto a

support layer of polyurethane and then dried. When heat is applied thereto the dried nitrile phenolic will soften to cause adhesion of the material to a surface to which it is applied. The nitrile phenolic is formed of a mixture of carboxy-modified NBR polymer, thermosetting phenolic resin, coumarone-indene resin, and sterically hindered phenol of the type octadecyl 3-(3',5'-di-tert-butyl-4'-hydroxyphenyl) propionate. The nitrile phenolic and polyurethane support then form a thermosetting tape which can be secured to a clip or other fastener. The clips or fasteners utilizing the thermosetting adhesive can be firmly secured to the exterior painted surface of automobiles by the application of heat for a short period of time. Also the thermosetting adhesive tape can be applied to threaded fasteners for securing the same to wall surfaces such as metal or fiberglass for securing other articles thereto.

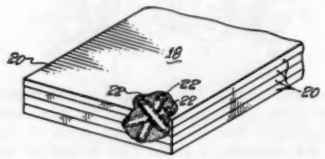



3,837,985

**MULTI-DIRECTIONAL REINFORCED COMPOSITE AND METHOD OF MAKING THE SAME**

Vance A. Chase, Poway, Calif., assignor to Whittaker Corporation

Filed Feb. 24, 1972, Ser. No. 228,929
Int. Cl. B32b 7/08
U.S. Cl. 161—55 16 Claims




An improved composite is fabricated by laying up a thickness of fibers bearing an uncured resin matrix, driving a series of spaced cured resin impregnated reinforcing elements at least partially through the lay-up at an angle, and then fully curing the resulting composite to bond the reinforcing elements into the lay-up.

3,837,986

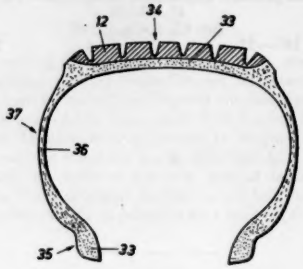
**MOLDED ARTICLE FORMED OF FIBER REINFORCED MATERIAL**

Werner Görter, Baden, Erich Kresta, Perchtoldsdorf, and Horst Stumpf, Baden, Austria, assignors to Semperit Aktiengesellschaft, Vienna, Austria

Filed July 30, 1971, Ser. No. 167,768
Claims priority, application Austria, Aug. 5, 1970, A 7,107/70
Int. Cl. B32b 5/12
U.S. Cl. 161—59 16 Claims

A molded article comprising an elastomeric material and essentially oriented fibers embedded in said elastomeric material. The molded article includes at least two sections containing such fibers, wherein said fibers of said sections possess respective orientation directions differing from one another.

There is also disclosed a method and apparatus for forming such molded articles wherein there is provided a hollow mold having a mold compartment, and means define at least one auxiliary compartment provided for said hollow mold. The hollow mold includes at least one mold section constructed to be movable to displace molding material containing the fibers and used for forming the article into a part of the hollow compartment of said mold which is initially free of molding material.

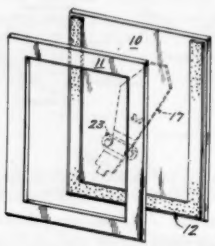



3,837,987

**DOCUMENT HOLDER**

Michael J. Williams, Toledo, Frederick C. Blome, Maumee, and Otto W. Hueter, Toledo, Ohio, assignors to Gross Manufacturing Corporation, Toledo, Ohio

Filed Dec. 18, 1972, Ser. No. 315,925
Int. Cl. B44f 7/00
U.S. Cl. 161—18 7 Claims




A document holder such as a photo mount having a rigid frame holder and a folding support is disclosed. The frame body includes a rigid back panel with a complementarily shaped frame over the front surface of the back panel with a spacer element therebetween to form a pocket for the document. The spacer element is a raised portion on the front face of the back panel which extends along three sides to provide a slot on the fourth side extending into the pocket. The spacer element is recessed inwardly from the sides of the adjacent frame and panel on all three sides and on its ends adjacent the fourth side to form a recess which has the external visual appearance of the slot. The folding foot is fabricated from a fatigue resistant thermoplastic and is secured to the back panel by a bridge piece fabricated from a thermoplastic material compatible with the back panel.

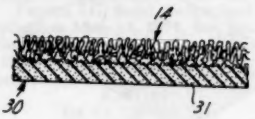
## 3,837,988
## COMPOSITE MAT

**Donald E. Hennen, Cottage Grove, and Leroy I. Kusilek, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.**

**Continuation-in-part of application Ser. No. 83,450, Oct. 23, 1970, which is a continuation-in-part of application Ser. No. 676,497, Oct. 19, 1967, now abandoned. This application Jan. 24, 1973, Ser. No. 326,552**

**Int. Cl. B32b** *3/06, 3/26;* **D04h** *11/00*

**U.S. Cl. 161—67** **10 Claims**




A resilient open lofty web of interengaged coarse continuous coiled filaments, with one major surface of the web being flattened, is integrated with a bonding resin to permanently bond the filaments together to form a tough, easily-cleaned mat material which is especially useful as carpeting in damp areas. The web may also be laminated to various sheet-like substrates such as plastic film, metal or plastic screens, synthetic foam layers, and the like, to provide a dimensionally stable mat material which is especially suited for use as a floor covering.

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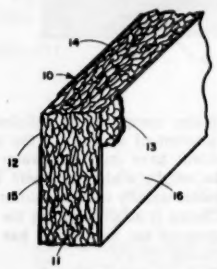
## 3,837,989
## PANEL STRUCTURE HAVING AN INTERMEDIATE FILLER OF RANDOM ORIENTED, RESIN RIGIDIFIED PARTICLES OF CELLULOSIC MATERIAL

**Wallace W. McCoy, 1471 Valane Drive, Glendale, Calif. 91208**

**Original application Mar. 2, 1970, Ser. No. 15,364, now Patent No. 3,664,076. Divided and this application Apr. 19, 1972, Ser. No. 245,547**

**Int. Cl. B32b** *3/12, 5/07, 5/16;* **B31d** *3/02;* **E04b** *5/00*

**U.S. Cl. 161—68** **6 Claims**




This disclosure involves a form of prefabricated structure such as commercial or industrial buildings, houses or enclosures employing an external skin bonded to an intermediate structural and insulating filler with an inner surface skin similarly bonded to the filler material. The external skins are preferably resin bonded glass fiber and the intermediate filler composes a random honeycomb structure made of cellulosic material, such as individual pieces of paper of random size each rigidified and bonded to adjacent pieces by a resinous binder which is compatible with the binder of the skins. The structure is shown in continuous panels and actually three dimensional structure configurations as well as discrete structural elements which may be used to replace comparable structural elements normally made of wood. Disclosed also are processes for continuous manufacture of structures employing the concept of this invention either in the factory or on site.

The same basic structure is shown in various configurations. Illustrated are a number of panel sections employing the same structure arrangement but different filler density whereby the load bearing strength of the panel may be controlled and its insulating properties varied as well. Structural strength can also be varied by changing the dimensions and concentrations of resin/Fiberglas of either or both external skin surfaces. Disclosed also are individual structural elements produced from waste paper material and resin bonded skins.

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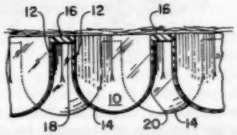
## 3,837,990
## REINFORCED CUSHIONING MATERIAL

**Richard L. McConnell, 421 Manderley Road 37660, and James E. Huffaker, 1117 Radcliffe Drive 37664, both of Kingsport, Tenn.**

**Continuation of abandoned application Ser. No. 47,851, June 19, 1970. This application Dec. 7, 1972, Ser. No. 313,005**

**Int. Cl. B32b** *3/12*

**U.S. Cl. 161—68** **6 Claims**




Molded thermoplastic sheet material useful in cushioning applications. The material is provided with a multiplicity of adjacent, closely spaced cellular protrusions extending from one side of the sheet material and an interconnected grid of land areas at the base of the cells. The cushioning material is reinforced with pervious material attached to and connecting the land areas so as to resist deformation.

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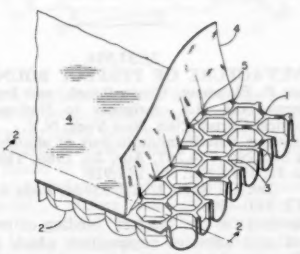
## 3,837,991
## PLASTIC CUSHIONING REINFORCED MATERIAL

**Ernest C. Evans, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.**

**Continuation of abandoned application Ser. No. 139,617, May 3, 1971. This application May 10, 1973, Ser. No. 358,904**

**Int. Cl. B32b** *3/12*

**U.S. Cl. 161—68** **4 Claims**




Multi-ply thermoplastic sheet cushioning material in which a first sheet has a plurality of closely spaced cellular protrusions extending from one side of the sheet and

a grid of land areas on the second side of the sheet define openings of the protrusions; a second sheet extends on said grid closing over the protrusions and is secured to land areas of the grid in such manner as to reinforce the first sheet. The second sheet is so secured to the first as to provide for air flow communication between cellular protrusions.

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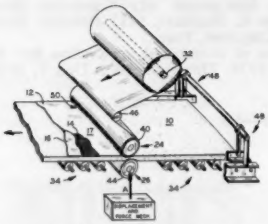
**3,837,992**
**LAMINATED ARTICLE**
**James Webster Sherman, Richmond, Ind., and Ronald Buxton Raab, Perrysburg, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.**
**Filed Nov. 24, 1971, Ser. No. 201,895**
**Int. Cl. B32b** *15/02*
**U.S. Cl. 161—89** **1 Claim**



A faced substrate in which the facing is a composite sheet having its components bonded by a film adhesive which also bonds the facing to the substrate. The composite facing is formed by continuously advancing the component layers of the facing to a point of convergence where heat and pressure are applied to adhesively bond the layers with the film adhesive into a facing having the adhesive exposed at one face and subsequently applying the facing with an orientation presenting the exposed adhesive to a substrate to which it is to be applied. In a line process the facing and substrate are advanced to a point of convergence where heat and pressure are again applied to adhesively bond the facing to the substrate with the same film adhesive.

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**3,837,993**
**ADHESION OF TEXTILES TO RUBBER**
**Robert M. Shimmel, Southgate, Mich., assignor to Uniroyal, Inc., New York, N.Y.**
**No Drawing. Filed May 3, 1972, Ser. No. 249,853**
**Int. Cl. D03d** *25/00*
**U.S. Cl. 161—92** **10 Claims**

Incorporation of trimethylene trisulfone in rubber stock increases the adhesion to textiles.

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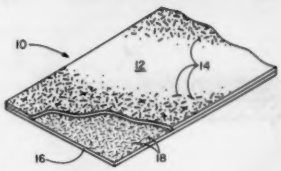
**3,837,994**
**MANUFACTURE OF PERFECT BOUND BOOKS**
**Thomas P. Flanagan, Green Brook, and Irving I. Kaye, Murray Hill, N.J., assignors to National Starch & Chemical Corporation, New York, N.Y.**
**No Drawing. Continuation-in-part of abandoned application Ser. No. 724,267, Apr. 25, 1968. This application June 12, 1972, Ser. No. 261,916**
**Int. Cl. B32b** *27/10, 31/04;* **B42c** *9/00*
**U.S. Cl. 161—100** **12 Claims**

A method for the "perfect" binding of books wherein the hot melt adhesive composition which is utilized to bind the sheets thereof comprises a blend of (a) a block polymer of monovinyl aromatic hydrocarbons and conjugated dienes; (b) a tackifying resin; (c) a stabilizer; and (d) a wax diluent.

**3,837,995**
**AUTOGENOUSLY BONDED COMPOSITE WEB**
**John G. Floden, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.**
**Filed Apr. 24, 1972, Ser. No. 247,130**
**Int. Cl. B32b** *5/02;* **D04h** *1/04*
**U.S. Cl. 161—150** **10 Claims**




Autogenously bonded multi-ply nonwoven web including one or more layers of synthetic, thermoplastic polymeric microfibers and one or more layers of larger diameter natural fibers. Bonding is obtained between the layers of synthetic microfibers and the layers of natural fibers by contact without the need for supplemental bonding. The resulting composite webs are strong, conformable and possess other desirable properties depending upon the particular layer components utilized.

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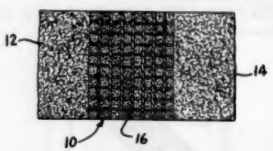
**3,837,996**
**WATER REPELLENT NONWOVEN MATERIAL**
**Ralph V. Braun and Audrey J. Knauer, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.**
**Filed Mar. 25, 1970, Ser. No. 22,458**
**Int. Cl. B32b** *5/26, 5/12*
**U.S. Cl. 161—156** **6 Claims**




Nonwoven laminates comprised of cellulose wadding in a basis weight amount of at least 15 lbs. and treated with a water repellent have increased water repellency when at least 9 lbs. of the wadding present have a low porosity. The laminates usually contain reinforcing means and optimum repellency is achieved when the laminating adhesive used to prepare the nonwovens has a low surfactant content.

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**3,837,997**
**BORON NITRIDE PRODUCTS**
**James Economy, Buffalo, Ronald E. Highsmith, North Tonawanda, and John H. Mason, Clarence, N.Y., assignors to The Carborundum Company**
**No Drawing. Filed Mar. 16, 1971, Ser. No. 124,919**
**Int. Cl. B32b** *5/16;* **B44d** *1/02;* **C01b** *21/06*
**U.S. Cl. 161—170** **17 Claims**

A low-density product comprising boron nitride fibers bonded by boron nitride formed in situ is produced by heating a formed mass of boron nitride fibers that has been impregnated with boric acid solution to an elevated temperature in ammonia. The fibrous mass may be shaped

before or after impregnation with the solution. Incorporation of a nitrogenous material in the solution gives improved results and the density may be increased, if desired, by the adidtion of fillers. Purity of the product is affected by the nitriding temperature employed.

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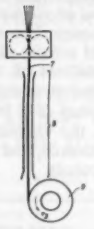
3,837,998

## STABLE BAND CONSISTING OF SIZED STAPLE FIBERS AND POSSESSING HIGH LENGTHWISE STABILITY

Werner Naegeli, Winterthur, Switzerland, assignor to Pavena AG, Basel, Switzerland

Original application Mar. 13, 1970, Ser. No. 19,243, now Patent No. 3,770,538. Divided and this application June 18, 1971, Ser. No. 154,569
Claims priority, application Switzerland, Mar. 21, 1969 4,361/69
Int. Cl. D04h 1/58
U.S. Cl. 161—170 2 Claims



A stable band possessing high lengthwise stability wherein the elastic elongation of the stable band, compared to one in which binding occurred in a tension-free state, is several times smaller.

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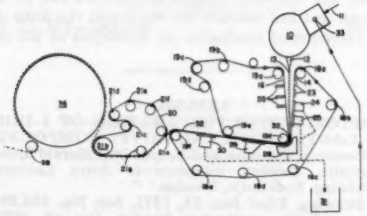
3,837,999

## METHOD OF CONTROLLING THE ORIENTATION OF FIBERS IN A FOAM FORMED SHEET

Raymond Chung, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 20, 1971, Ser. No. 209,749
Int. Cl. D21h 3/02
U.S. Cl. 162—101 2 Claims



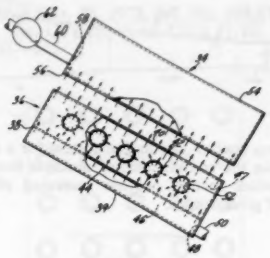
In the process of foam forming fibers into sheet material, the fibers are oriented to the degree desired by controlling the relative motion between foam segments. For random orientation, operation in the plug flow regime is preferred while operation in the yield flow regime results in increased fiber orientation in the direction of flow. The degree of fiber alignment can be controlled by varying the wetted perimeter of the nozzle from which the foam exits onto the carrier wire.

3,838,000

## METHOD AND DEVICE FOR MOISTURIZING A WEB, INCLUDING AN AIR HEADER WITH PERFORATED WALLS

John C. Urbas, Dorval, Quebec, Canada, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed June 5, 1972, Ser. No. 259,794
Claims priority, application Canada, May 5, 1972, 141,416
Int. Cl. D21f 7/00
U.S. Cl. 162—207 4 Claims



A system for uniformly dispersing a liquid medium, such as water, to a web. The web is continually conveyed between a header and a suction box. Within the header, two gases at different states and containing different relative amounts of the medium are mixed to produce a mist. This mist is then carried into and through the web by the action of the suction box.

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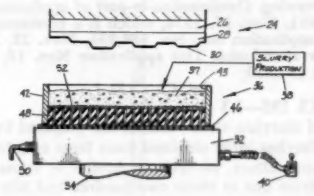
3,838,001

## ASSEMBLY FOR PRESS-FORMING SHEET MATERIAL

Norman Shirk Greiner, Somerville, and Norman Hannington, Piscataway, N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed June 15, 1972, Ser. No. 263,059
Int. Cl. D21j 3/00
U.S. Cl. 162—416 3 Claims

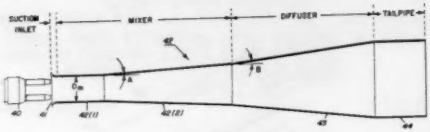


A method of and an assembly for press-forming sheet material such as, for example, asbestos-cement sheets displaying a predetermined deep textured design is disclosed herein. In carrying out the method, a slurry of the sheet material is placed in an open mold comprising part of a press assembly and on top of a resilient pad positioned within the mold. A texture plate fastened to the top die face of the press assembly is provided for applying forming pressure to the slurry so as to consolidate the latter into sheet material displaying the desired texture. During consolidation and in response to the forming pressure, the aforestated pad is deformed to provide substantially uniform density to the sheet material.

### 3,838,002
### JET PUMP FOR NUCLEAR REACTOR

**Douglas M. Gluntz, Campbell, George W. Fitzsimmons, Jr., San Jose, Siegbert Wolf, Sunnyvale, and Alvydas A. Kudirka, San Jose, Calif., assignors to General Electric Company**

**Filed July 21, 1972, Ser. No. 274,061**
**Int. Cl. F04f *5/46*; G21c *15/24*; G21d *1/04***
**U.S. Cl. 176—65** **13 Claims**




A jet pump coolant circulation system for a nuclear reactor wherein the combination of multiple nozzles and a divergent mixer section provide increased efficiency in jet pumps of given length.

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### 3,838,003
### PROCESSES FOR THE CULTIVATION OF FUNGI

**Pol Joseph Ghislain Lhoas, London, England, assignor to Beecham Group Limited, Brentford, Middlesex, England**

**No Drawing. Filed Jan. 12, 1973, Ser. No. 323,221**
**Int. Cl. C12k *7/00***
**U.S. Cl. 195—1.1** **4 Claims**

Fungus infected with a double-stranded ribonucleic acid virus is prepared by contacting fungal cells of opposite mating types or opposite gametes with double-stranded ribonucleic acid virus particles of fungal origin to infect at least some of the resultant zygotes, with the virus particles and cultivating the infected zygotes to produce the virus infected fungus.

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### 3,838,004
### CALF DIARRHEA VIRUS VACCINE AND PROCESSES

**Charles A. Mebus and Marvin J. Twiehaus, Lincoln, Nebr., assignors to Board of Regents of the University of Nebraska, Lincoln, Nebr.**

**No Drawing. Continuation-in-part of application Ser. No. 90,481, Nov. 17, 1970, which is a continuation-in-part of application Ser. No. 880,956, Nov. 28, 1969, both now abandoned. This application Nov. 10, 1971, Ser. No. 197,520**
**Int. Cl. C12k *7/00***
**U.S. Cl. 195—1.3** **10 Claims**

Calf diarrhea virus vaccines are prepared by passaging calf diarrhea virus obtained from feces of infected calves in tissue culture, particularly bovine or swine tissue culture, from one to about two hundred and fifty times.

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### 3,838,005
### METHODS FOR THE FRACTIONATION OF AMYLOSES

**Masashi Kurimoto and Mikihiko Yoshida, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan**

**No Drawing. Filed Aug. 18, 1971, Ser. No. 172,900**
**Claims priority, application Japan, Aug. 28, 1970, 45/75,374**
**Int. Cl. C13l *1/00, 1/06***
**U.S. Cl. 195—31 R** **8 Claims**

A solvent extraction process for fractionating an amylose powder having a range of D.P. values into a fraction having D.P. values above 50 and a fraction having D.P. values below 50. Solvents which may be used are warm water, an aqueous 3–6 carbon alkanol, aqueous acetone and an aqueous solution of a fatty acid.

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### 3,838,006
### PROCESS FOR PRODUCING HEAT-RESISTANT STARCH SYRUPS

**Hiromi Hijiya and Mamoru Hirao, Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan**

**Continuation-in-part of abandoned application Ser. No. 5,879, Jan. 26, 1970. This application Sept. 19, 1972, Ser. No. 290,375**
**Claims priority, application Japan, Jan. 24, 1969, 44/5,124**
**Int. Cl. C12b *1/00***
**U.S. Cl. 195—31 R** **8 Claims**

This invention provides a process for producing special starch syrups which are stable against heat, very sweet, and hard to crystallize, by subjecting starch to the action of an α-1,6-glucosidase such as isoamylase or pullulanase, in the course of manufacture of one of various starch syrups through the use of saccharogenic amylases such as α- or β-amylase, glucoamylase and/or the like, thereby extending the scope of activity of the α- or β-amylase and transforming the structures of the oligosaccharides and dextrins thus produced to straight-chain structures so as to obtain a starch syrup of a freely chosen composition and properties with the viscosity, flavor, and other attributes modified as desired, and then reducing the resulting syrup to sugar alcohols.

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### 3,838,007
### WATER-INSOLUBLE ENZYME COMPOSITION

**Antoon Gerardus van Velzen, The Hague, Netherlands, assignor to Gist-Brocades N.V., Delft, Netherlands**

**No Drawing. Filed Sept. 20, 1972, Ser. No. 290,493**
**Claims priority, application Great Britain, Sept. 24, 1971, 44,730/71**
**Int. Cl. C07g *7/02*; C12b *1/00*; C12d *13/02***
**U.S. Cl. 195—31 R** **30 Claims**

A water insoluble enzyme preparation is prepared by a process involving the steps of suspending a non-proteolytic enzyme in an aqueous solution of gelling protein, combining the mixture obtained with an organic liquid poorly miscible or immiscible in water to produce a suspension having the protein in particulate form, treating the resulting suspension to effect gelation of the gelling protein and contacting the resultant gelled protein particles with a bi- or polyfunctional protein reagent to cross-link the molecules of the proteins present in the particles. The insoluble enzyme preparation can be used in column and bed reactors for enzymatic reactions such as for inversion of saccharose or hydrolysis of starch.

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### 3,838,008
### STEREOSELECTIVE PREPARATION OF L-DOPA AND L-M-TYROSINE AND NOVEL COMPOUNDS

**Peter Bamberg, Enhorna, and Berndt Olof Harald Sjoberg, Sodertalje, Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden**

**No Drawing. Filed Jan. 15, 1971, Ser. No. 106,894**
**Claims priority, application Sweden, Jan. 19, 1970, 615/70; June 25, 1971, 8,835/70, 8,836/70**
**Int. Cl. C12d *1/00***
**U.S. Cl. 195—29** **11 Claims**

A method is described for the stereoselective preparation of L-Dopa and L-m-tyrosine and novel compounds in which the hydroxy groups of L-Dopa or L-m-tyrosine are substituted. The reaction is characterized by the use of stereoselectivity active acylase prepared from *E. coli* which is used to treat a precursor of the desired compound.

## 3,838,009
## PROCESS FOR PRODUCING DETERGENT RESISTING ALKALINE PROTEASE

**Jyuichiro Fukumoto, Takarazuka, Takehiko Yamamoto, Amagasaki, and Daisuke Tsuru, Sakai, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd.**

**Continuation of abandoned application Ser. No. 864,452, Oct. 7, 1969. This application Aug. 16, 1972, Ser. No. 280,959**

**Claims priority, application Japan, Oct. 25, 1968, 43/78,189**

**Int. Cl. C12d** *13/10*

**U.S. Cl. 195—65** **1 Claim**

The process for producing alkaline protease which comprises culturing in a suitable medium a strain of *Bacillus subtilis,* which strain has the ability to grow in a nutrient medium in the presence of sodium lauryl sulfate, the presence of sodium lauryl sulfate is not required in the fermentation medium, however.

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## 3,838,010
## PHOTOMETRIC METHOD FOR DETERMINING LACTIC ACID DEHYDROGENASE OR GLUCOSE-6-PHOSPHATE DEHYDROGENASE

**Frank E. Hammer, Skokie, Ill., assignor to G. D. Searle & Co., Chicago, Ill.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 838,664, July 2, 1969. This application Jan. 17, 1972, Ser. No. 218,477**

**Int. Cl. G01n** *31/14*

**U.S. Cl. 195—103.5 R** **9 Claims**

An improved photometric method for the determination of reduced di- and tri-phosphopyridine nucleotides in an incubation mixture containing lactic acid dehydrogenase or glucose-6-phosphate dehydrogenase and the appropriate substrates therefor, comprising adjusting the pH of the reaction mixture to form about 10.0 to about 12.0, prior to the photometric determination, to stabilize the absorbance of the resulting solution when measured at about 340 mμ.

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## 3,838,011
## PROCESS AND APPARATUS FOR THE QUANTITATIVE DETERMINATION OF AN ENZYMATICALLY REACTIVE SUBSTANCE

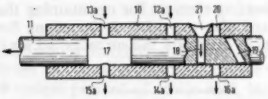
**Alexander Hagen and Hans Ulrich Bergmeyer, Tutzing, Upper Bavaria, Wolfgang Gruber, Garatshausen, and Klaus Beaucamp and Dieter Jaworek, Tutzing, Upper Bavaria, Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany**

**Filed June 12, 1972, Ser. No. 261,763**

**Claims priority, application Germany, June 18, 1971, P 21 30 308.2**

**Int. Cl. G01n** *31/14*

**U.S. Cl. 195—103.5 R** **20 Claims**



Enzymatically reactive substances contained in aqueous solutions are quantitatively determined by introducing a defined amount of a solution sample containing the substance to be determined and which is free of air bubbles, into a stream of buffer solution in a block-like fashion, wherein the buffer solution contains the reagents necessary for an enzymatic reaction with said substances and flows with constant velocity and wherein the introduction of the block sample does not substantially alter the velocity of flow, contacting the resulting stream with the appropriate enzyme and then passing the stream over a detector to indicate the amount of reaction having occurred, and relating readings from the detector to the amount of the substance to be determined contained in the sample.

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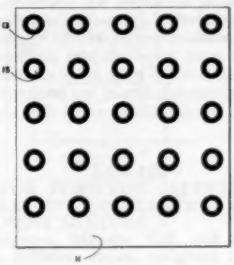
## 3,838,012
## MULTIPOINT TEST PAPER

**Calvin E. Higgens and Wilbur L. Martin, Jr., Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.**

**Filed Nov. 20, 1972, Ser. No. 308,077**

**Int. Cl. C12k** *1/10;* **G01n** *31/00*

**U.S. Cl. 195—127** **7 Claims**



A test paper for conducting a plurality of laboratory analytical tests is formed from filter paper bearing a plurality of visible printings which circumscribe predetermined areas on the filter paper for receiving liquid test samples.

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## 3,838,013
## COMBINED SAMPLING AND BACTERIOLOGICAL CULTURING DEVICE

**John A. Bergeron, Schenectady, N.Y., assignor to General Electric Company**

**Filed Apr. 1, 1971, Ser. No. 130,254**

**Int. Cl. C12k** *1/10*

**U.S. Cl. 195—139** **12 Claims**

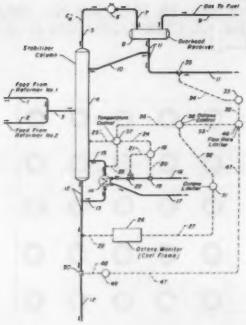
Improved devices are described for combined sampling and culturing to enable a measure of the microorganism content of a liquid sample. The preferred structure is a long thin tube (e.g. a disposable sterile, transparent, preplugged serological pipette) having internal area thereof coated with a uniformly thick layer of culture medium.

3,838,014

## COMBINATION COLUMN REBOILER HEAT INPUT, OCTANE, OVERHEAD AND BOTTOMS CONTROL APPARATUS

Walter A. Bajek, Lombard, and James H. McLaughlin, La Grange, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 18, 1972, Ser. No. 272,916
Int. Cl. B01d 3/42
U.S. Cl. 196—132 18 Claims



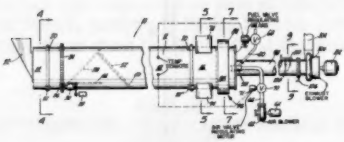
A process for the maximization of a gasoline bottoms stream from a stabilizer column. The control utilized is a combination of an on-stream octane monitor and bottoms and overhead flow rate limiting means which operate in combination to vary a set point temperature on a reboiler heat input control means. The control system is applicable to hydrocarbon processes and in particular to gasoline stabilization.

3,838,015

## METHOD AND APPARATUS FOR PYROLYTIC DECOMPOSITION OF TRASH

Robert I. Buchbinder and Albert J. Buchbinder, West Covina, Calif., assignors to Devco Management Inc., New York, N.Y.

Continuation of abandoned application Ser. No. 73,116, Sept. 17, 1970. This application Sept. 20, 1972, Ser. No. 290,754
Int. Cl. C10b 49/06, 53/00
U.S. Cl. 201—1 16 Claims



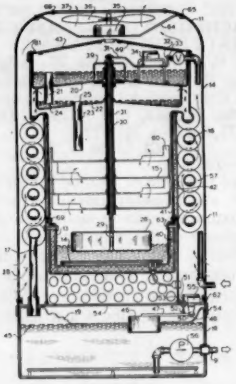
Industrial and municipal trash is fed into one end of a rotatably supported, elongated drum, which turns at a relatively slow rate of rotation, and the carbonized residue is discharged from the other end. Trapdoor arrangements at the entrance and exit ends allow material to be fed into and discharged from the drum as the latter revolves, without opening the interior of the drum to the atmosphere. Internal gas burners at one end of the drum are operated at the start of operations to heat up the drum and contents to high temperature, causing destructive distillation of carbonaceous material with resultant production of combustible gas. Fuel supply to the burners is then cut off and air is admitted through burners at a controlled rate to maintain combustion of gases within the interior of the drum to the extent required to sustain operating temperatures. Excess unburned gas is exhausted and cooled, and volatile liquids are condensed out.

3,838,016

## WATER STILL

Otto L. Powers, 231 Coronada Blvd., Titusville, Fla. 32780

Filed Mar. 29, 1972, Ser. No. 239,194
Int. Cl. B01d 3/00
U.S. Cl. 202—83 11 Claims



A water still apparatus for producing distilled water is provided having the heating element for generating steam from water in a container and a condenser for condensing the steam into distilled water. The still has cascading baffles for water entering the still to pass over and for the steam to pass through, thereby preheating the entering water and removing heat from the steam. The still is automatically operated by utilizing a pair of floats for controlling the input of water and to cut off the still when the distilled water container is filled. The steam is prevented from escaping from the water inlet by having an overflow pipe feeding to below a water level on the next level of the input water path and a fan for cooling the condenser along with a heating element for maintaining the distilled water sterile are also provided as is means for making the still operate to humidify the surrounding air if desired.

3,838,017

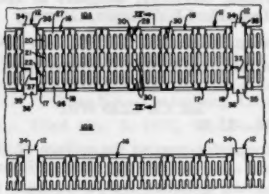
## REGENERATOR FOR COKE OVENS

Otto Messerschmidt, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, West Germany

Filed Sept. 19, 1972, Ser. No. 290,361
Claims priority, application West Germany, Oct. 21, 1971, P 21 52 351.3
Int. Cl. C10b 1/06, 5/12
U.S. Cl. 202—141 5 Claims

A vertical regenerator for a horizontal coke oven chamber. Columns of superimposed checkerbricks are arranged so that each brick extends longitudinally between spaced

parallel walls of the regenerator. Along the longitudinal length of each checkerbrick, there extends a projection



which passes into a complementary formed recess in a vertically adjacent brick.

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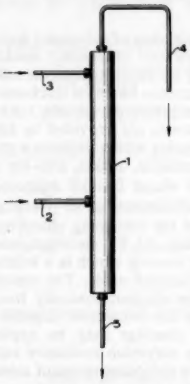
**3,838,018**

## PROCESS FOR ISOLATING FORMALDEHYDE FROM MIXTURES OF ACETIC ACID, FORMALDEHYDE AND WATER BY DISTILLATION WITH ADDED WATER

**Klaus Gehrmann, Knapsack, Heinz Erpenbach, Surth, Heinz Handte, Erftstadt-Bliesheim, and Manfred Bredtmann, Elsdorf, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany**

**Filed Sept. 8, 1972, Ser. No. 287,477**
**Claims priority, application Germany, Sept. 11, 1971, P 21 45 517.4**
**Int. Cl. B01d *3/34*; C07c *45/24, 51/44***
**U.S. Cl. 203—92** **4 Claims**



Formaldehyde is isolated and pure acetic acid is recovered from mixtures containing substantially between 75 and 99 weight percent of acetic acid, between 0.5 and 15 weight percent of water and between 0.5 and 10 weight percent of formaldehyde. To this end, the mixture is distilled in a distilling column at atmospheric or reduced pressure at a reflux ratio between 0.5 and 2, and water flowing countercurrently with respect thereto, is simultaneously introduced near the head of the column. The water is used in a proportion substantially between 10 and 20 weight percent, based on the crude acid put through. Following condensation, an aqueous formaldehyde solution is removed near the head of the distilling column and acetic acid with a purity of at least 99 weight percent is obtained, in the column base portion.

**3,838,019**

## INHIBITION OF POLYMER FORMATION DURING DISTILLATION OF CRUDE VINYL ACETATE

**Wulf Schwerdtel, Cologne-Stammheim, Walter Kronig and Gerhard Scharfe, Leverkusen, and Wolfgang Swodenk, Odenthal-Globusch, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Continuation of abandoned application Ser. No. 870,549, Nov. 5, 1969. This application Mar. 27, 1972, Ser. No. 238,643**
**Claims priority, application Germany, Nov. 8, 1968, P 18 07 738.8**
**Int. Cl. B01d *3/34*; C07c *67/06***
**U.S. Cl. 203—8** **12 Claims**

In the purification of vinyl acetate by distillation, free oxygen, preferably diluted as with carbon dioxide, is introduced into the individual vinyl acetate distillation columns to ensure that oxygen is present throughout each distillation column whereby the formation of polymers in the distillation column is substantially avoided. It has proved to be of particular advantage to introduce small quantities of oxygen upwards into the boiler parts of the columns which are normally in the form of circulation evaporators, and it is preferred to use known polymerization inhibitors in conjunction with the oxygen treatment.

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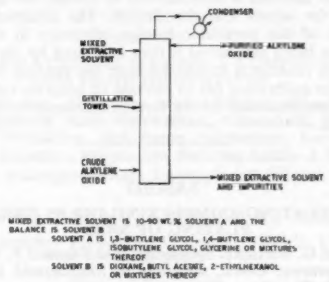
**3,838,020**

## PROCESS FOR PURIFYING ALKYLENE OXIDES BY EXTRACTIVE DISTILLATION WITH A PLURAL SOLVENT MIXTURE

**Osamu Kageyama, Manabu Kai, and Hirosi Yokoo, Ohimachi, Saitama, Japan, assignors to Dalcel Ltd., Osaka, Japan**

**Filed Nov. 28, 1972, Ser. No. 310,089**
**Claims priority, application Japan, Dec. 3, 1971, 46/97,682**
**Int. Cl. B01d *3/40*; C07d *1/08***
**U.S. Cl. 203—56** **9 Claims**


CONDENSER
MIXED EXTRACTIVE SOLVENT
PURIFIED ALKYLENE OXIDE
DISTILLATION TOWER
CRUDE ALKYLENE OXIDE
MIXED EXTRACTIVE SOLVENT AND IMPURITIES
MIXED EXTRACTIVE SOLVENT IS 10-90 WT.% SOLVENT A AND THE BALANCE IS SOLVENT B
SOLVENT A IS 1,3-BUTYLENE GLYCOL, 1,4-BUTYLENE GLYCOL, ISOBUTYLENE GLYCOL, GLYCERINE OR MIXTURES THEREOF
SOLVENT B IS DIOXANE, BUTYL ACETATE, 2-ETHYLHEXANOL OR MIXTURES THEREOF

Alkylene oxides having from 3 to 5 carbon atoms are purified by subjecting same to extractive distillation using at least one solvent (A) selected from the group consisting of 1,3-butylene glycol, 1,4-butylene glycol, isobutylene glycol and glycerine and at least one solvent (B) selected from the group consisting of dioxane, butyl acetate and 2-ethylhexanol.

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**3,838,021**

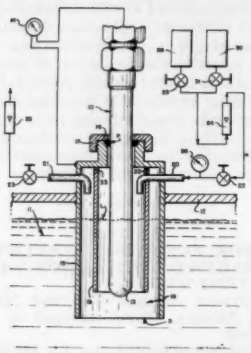
## METHOD AND APPARATUS FOR IN SITU CALIBRATION OF ELECTROCHEMICAL SENSORS

**William Arbiter, Yonkers, N.Y., assignor to United Nuclear Corporation, Elmsford, N.Y.**

**Filed July 18, 1973, Ser. No. 380,381**
**Int. Cl. G01n *27/30, 27/46***
**U.S. Cl. 204—1 T** **6 Claims**

An electrochemical sensor that monitors the concentration of a particular foreign substance (e.g. hydrogen) in a fluid medium (e.g. a molten metal) by measuring the

electrochemical activity of this substance in the fluid medium is calibrated without removing the sensor from the fluid medium. A shroud is provided that surrounds the portion of the sensor immersed in the fluid medium and that extends beyond the end thereof. An inert gas (e.g. helium) is introduced into the space between the sensor and the shroud to displace the fluid medium therefrom. The inert gas is then replaced with a calibrating gas containing a known amount of the particular substance being monitored, and the electrochemical activity of the



substance in the calibrating gas is measured by the sensor. The calibrating gas is then replaced by a further quantity of the inert gas to flush the calibrating gas therefrom, and the fluid medium is then allowed to reenter the space between the sensor and the shroud. The electrochemical activity of the particular foreign substance in the fluid medium being monitored is then measured by the sensor, and this reading is compared with the reading obtained from the calibrating gas to provide an accurate indication of the concentration of the foreign substance in the fluid medium.

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**3,838,022**

## CHELATING/COMPLEXING DIP IN BRIGHT PLATING OF BRASS

**Michael G. Bartolini, Southbury, and Edmund E. Horner, Watertown, Conn., assignors to MacDermid Incorporated, Waterbury, Conn.**

**No Drawing. Filed Nov. 9, 1972, Ser. No. 305,005**

**Int. Cl. C23b 5/62**

**U.S. Cl. 204—32 R** **8 Claims**

Process of nickel plating brass-type copper alloys. The conventional plating cycle steps of (1) soak clean, (2) electroclean (as a single or two separate step operation), (3) acid dip and (4) then electroplate, are modified by incorporating an additional step consisting in immersing the copper alloy substrate in an aqueous chelating/complexing solution after the soak clean but before the acid dip steps. The purpose is to eliminate visible irregularities in the nickel deposit, as well as to improve adhesion of the plate to the substrate. The preferred chelating/complexing materials in aqueous solution include the alkali metal salts of polycarboxylic acids, such as gluconic, tartaric, heptonic, oxalic and citric; the alkali metal salts of polyphosphoric acids; the alkali metal salts of lower alkyl-substituted amino acetic acids and hydroxy amino acids; and compatible combinations of such agents.

**3,838,023**

## SEALING ANODIZED ALUMINUM

**Wolfgang Friedemann, Neuss, and Hans Gunther Germscheid, Hosel, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany**

**No Drawing. Filed Dec. 5, 1972, Ser. No. 312,341**

**Claims priority, application Germany, Dec. 17, 1971, P 21 62 674.4**

**Int. Cl. C23b 9/02**

**U.S. Cl. 204—35 N** **6 Claims**

In the process for treating the surface of aluminum or an aluminum alloy which comprises subjecting said surface to an anodic oxidation and subsequently sealing with hot water or steam, the improvement which consists essentially of sealing said surface by applying an aqueous solution containing from 0.0005 to 0.05 gm. per liter of a hydroxy carboxylic acid selected from the group consisting of (A) citric acid, tartaric acid, gallic acid and saccharic acid, (B) a water soluble salt of said acids of (A), and (C) the mixtures thereof at a temperature ranging from 90° C. to the solution boiling point temperature and at a pH of from 5 to 6, to the anodic oxidized surface.

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**3,838,024**

## METHOD OF IMPROVING THE CORROSION RESISTANCE OF SUBSTRATES

**Lowell W. Austin, Weirton, W. Va., Louis C. Beale, Jr., Grosse Ile, Mich., and Edwin J. Smith, Winterville, Ohio, assignors to National Steel Corporation**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 822,739, May 7, 1969. This application May 31, 1972, Ser. No. 258,420**

**Int. Cl. C23b 5/06**

**U.S. Cl. 204—41** **19 Claims**

The corrosion resistance of substrates having aluminum, nickel, iron-tin alloy and chromized metallic surfaces is increased markedly by electroplating thereon a thin coating of metallic chromium having a thickness of about 0.1–0.6 microinch. In a preferred variant, corrosion resistant ferrous metal substrates are provided by applying a composite protective coating which includes a synergistic combination of an aluminum, nickel, iron-tin alloy or chromized coating and about 0.1–0.6 microinch of electrodeposited metallic chromium as an overcoating. The corrosion resistance of the foregoing chromium coated substrates may be enhanced by electrochemically applying thereover a further coating which is a mixture of metallic chromium and chromium oxide. The metallic chromium electroplated and/or electrochemically treated substrates are excellent bases for protective organic coatings, and protective organic coatings may be applied thereto to further increase the corrosion resistance and/or for decorative purposes. The corrosion resistant substates prepared by the method of the invention are also provided.

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**3,838,025**

## METHOD AND ELECTROLYTE FOR PRODUCING A COPPER PLATED MICROSTRIP

**Emil Toledo, Natick, Mass., Dennis R. Sprague, Tempe, Ariz., and Erick F. Mocanu, Maynard, Mass., assignors to the United States of America as represented by the Secretary of the Navy**

**No Drawing. Filed Oct. 5, 1972, Ser. No. 295,406**

**Int. Cl. C23b 5/20, 5/48**

**U.S. Cl. 204—52 R** **3 Claims**

A microstrip and method of making it, including a specially formulated copper-plating bath, are disclosed. The microstrips are fabricated by chrome-copper evapo-

ration on substantially pure aluminum oxide substrates. After chrome-copper evaporation, a copper plating is applied, employing the new electroplating bath formulation.

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**3,838,026**

## ACIDIC ZINC ELECTROPLATING BATH

**Reinhard Koch, Geinsheim, Germany, assignor to Elektro-Plating Patent Holding S.A., Luxemburg, Luxemburg**

**No Drawing. Filed May 2, 1972, Ser. No. 249,627**

**Claims priority, application Germany, May 10, 1971, P 21 23 109.4**

**Int. Cl. C23b** *5/12, 5/46*

**U.S. Cl. 204—55 R** **6 Claims**

An acidic zinc electroplating bath yielding bright, dense and non-embrittling zinc deposits rapidly within a broad range of current density comprises one or more zinc salts corresponding to 80 to 200 g./l. of zinc, other conducting salts, usual lustering agents and, in addition, the reaction product of epichlorohydrin with one or more members of the group consisting of branched polyethylene imines and polypropylene imines and, if desired, linear or branched polyalkylene amines. Reaction products in which not more than 90%, preferably 20 to 60% of the amino groups of the polyethylene imines, polypropylene imines and polyalkylene amines respectively are reacted with epichlorohydrin are preferred.

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**3,838,027**

## α-(N-ACYL)-AMINO ACIDS AND A PROCESS FOR PREPARING SAME

**Peder Bernhard Berntsson, Vastra Frolunda, and Jan Ornulf Gaarder and Bo Robert Lamm, Goteborg, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden**

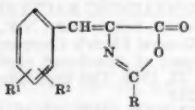
**No Drawing. Filed Sept. 13, 1972, Ser. No. 288,691**

**Claims priority, application Sweden, Sept. 13, 1971, 11,582/71**

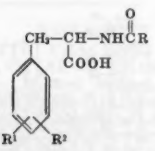
**Int. Cl. C07b** *29/06;* **C07c** *101/08*

**U.S. Cl. 204—74** **3 Claims**

Electrochemical reduction of oxazolones of the formula



is used in the preparation of -(N-acyl)-amino acids of the formula



in which formula R is a straight or branched alkyl or cyclodialkyl having at most six carbon atoms or phenyl, and $R^1$ and $R^2$, which may be substituted in the 2, 3, 4, 5 or 6 position, are the same or different and are selected from the group consisting of hydrogen, alkyl, cyclodialkyl, and alkoxy each having at most six carbon atoms, halogen, hydroxy, and acyloxy, or wherein $R^1$ and $R^2$ together form a divalent radical —$OR^3O$— bound to the benzene nucleus in the 2–3 or 3–4 position, in which radical $R^3$ denotes an alkylene group having 1–3 carbon atoms. The α-(N-acyl)-amino acids obtained are useful as intermediates in the preparation of amino acids, such as L-dopa, p-chlorophenylalanine and tyrosine, having valuable known therapeutic properties.

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**3,838,028**

## SPUTTERING APPARATUS

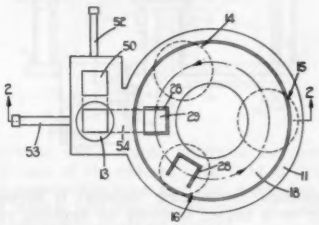
**Victor Needham, Balsall Common, and Maurice Parramore, Birmingham, England, assignors to Lucas Aerospace Limited, Birmingham, England**

**Filed Dec. 29, 1972, Ser. No. 319,390**

**Claims priority, application Great Britain, Dec. 29, 1971, 60,501/71**

**Int. Cl. C23c** *15/00*

**U.S. Cl. 204—298** **17 Claims**




A sputtering apparatus has a chamber for containing an inert gas at low pressure. A bore having metal walls forms part of the chamber. The end of said bore is closed by a cathode which is insulated from the metal walls. A carrier positions objects to be sputtered adjacent an end of the bore remote from the cathode.

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**3,838,029**

## ISOMERIZATION OF VITAMIN A COMPOUNDS AND THEIR DERIVATIVES

**Martin Fischer, Ellerstadt, Walter-Wielant Wiersdorff, Ludwigshafen, Axel Nuerrenbach, Gruenstadt, Dieter Horn, Heidelberg, and Franz Feichtmayr, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany**

**No Drawing. Filed Mar. 6, 1973, Ser. No. 338,533**

**Claims priority, application Germany, Mar. 7, 1972, P 22 10 800.5**

**Int. Cl. C07g** *13/00*

**U.S. Cl. 204—159** **9 Claims**

The invention relates to the isomerization of cis-vitamin A compounds and their derivatives into the all-trans isomers by the action of light on sensitizers in the presence of the cis-isomers.

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**3,838,030**

## PROCESS FOR PREPARING OF POLYTETRAFLUOROETHYLENE RESIN WAX

**Tsutomu Kagiya, Kyoto, and Miyuki Hagiwara, Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan**

**No Drawing. Filed Nov. 27, 1972, Ser. No. 309,812**

**Claims priority, application Japan, Jan. 20, 1971, 46/7,282; Nov. 30, 1971, 46/95,903**

**Int. Cl. B01j** *1/10;* **C08f** *3/24, 3/26*

**U.S. Cl. 204—159.14** **5 Claims**

A polytetrafluoroethylene resin wax is obtained by decomposing a polytetrafluoroethylene resin by means of an

ionizing radiation in the presence of oxygen and hydrogen and/or a halogenated methane. The resulting wax is useful as lubricant, mold releasing agent and the like.

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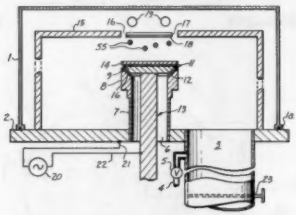
**3,838,031**
**MEANS AND METHOD FOR DEPOSITING RECRYSTALLIZED FERROELECTRIC MATERIAL**
Alvin A. Snaper, 2800 Cameo Circle, Las Vegas, Nev. 89107
Filed Sept. 15, 1972, Ser. No. 289,480
Int. Cl. C23c 15/00
U.S. Cl. 204—192 8 Claims



Recrystallized ferroelectric material is deposited by sputtering on a heated substrate by applying radio-frequency voltage to a target holder supporting a target of ferroelectric material held in proximity to the substrate within a chamber which is evacuated except for the presence of a small amount of inert gas, and optionally with a small amount of oxygen. The radio-frequency voltage causes ions of the gas to strike the target material with such force as to break off molecules or atoms which bond themselves to the substrate. The target holder is provided with fluid coolant channels which protect the target from deterioration.

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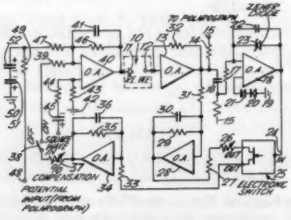
**3,838,032**
**COMPENSATED POLAROGRAPH**
Chaim M. Yarnitsky, Haifa, Israel, assignor to Technion Research and Development Foundation Limited
Continuation-in-part of application Ser. No. 222,512, Feb. 1, 1972, which is a continuation of application Ser. No. 28,778, Apr. 15, 1970, both now abandoned. This application Mar. 24, 1972, Ser. No. 237,804
Int. Cl. G01n 27/48
U.S. Cl. 204—195 R 12 Claims



A system for direct current polarographic analysis, an electrochemical technique used in analytical chemistry, includes a cell which contains the liquid to be analyzed. A reference (standard) electrode and a working (indicator) electrode in the cell are connected in an electronic circuit. The current-resistance potential drop across the cell is compensated by the circuit, which circuit includes integrative means and an electronic switch. The comparative closure time of the switch is determined by the cell resistance, which resistance, after integration, affects the voltage-sensitive gates of the electronic switch.

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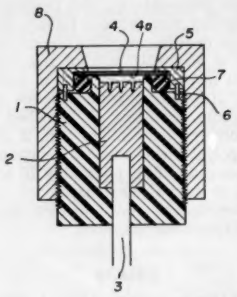
**3,838,033**
**ENZYME ELECTRODE**
Wolfgang Mindt, Therwil, Philippe Racine, Munchenstein, and Peter Schlapfer, Therwil, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Aug. 31, 1972, Ser. No. 285,765
Claims priority, application Switzerland, Sept. 9, 1971, 13,211/71
Int. Cl. G01n 27/46
U.S. Cl. 204—195 B 7 Claims



An enzyme electrode for determining the concentration of substances occurring in intermediate metabolism comprising an electrochemical sensor, a layer in contact with the sensor and containing an enzyme and an acceptor, and a semipermeable membrane covering the layer. In other embodiments, the acceptor is shown to be present either partially in undissolved form or in dissolved form contained in a layer of porous material.

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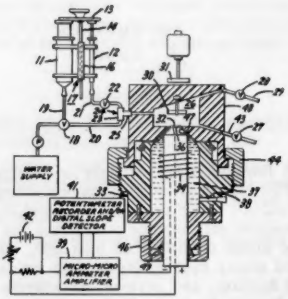
**3,838,034**
**APPARATUS FOR DETECTION OF CATALASE-CONTAINING BACTERIA**
James N. Groves, Schenectady, N.Y., assignor to General Electric Company
Continuation-in-part of abandoned application Ser. No. 723,179, Apr. 22, 1968. This application Dec. 18, 1969, Ser. No. 886,283
Int. Cl. G01n 27/30, 27/46, 31/14
U.S. Cl. 204—195 B 10 Claims



Sensitive, fast-response apparatus is described for the detection of the presence of (a) aerobic or facultatively

anaerobic bacteria, (b) certain body cell breakdown products in body fluids or (c) unusual contamination of the ambient by aerobic bacteria. The method employed, which enables dynamic, continuous observation of catalase-$H_2O_2$ reaction, is based upon measuring the incremental increase of oxygen partial pressure within a hydrogen peroxide solution. The inherent catalase content in such bacteria and in most animal cells promotes the rapid decomposition of hydrogen peroxide resulting in the liberation of oxygen. This measurement of oxygen partial pressure is made directly from the hydrogen peroxide solution by means of an oxygen permeable membrane polarographic cell equipped with a cathode configuration providing improved sensitivity. The presence of small numbers of bacteria or other catalase-containing cells may be quantitatively determined by conducting the catalase-$H_2O_2$ reaction in a very small reproducible reaction volume.

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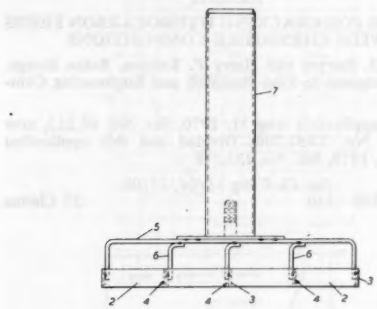
**3,838,035**

## MERCURY CELL WITH COATED ANODE

**Nicholas William James Pumphrey, Runcorn, Cheshire, England, assignor to Imperial Chemical Industries Limited, London, England**

**Filed Mar. 1, 1973, Ser. No. 337,204**
**Claims priority, application Great Britain, Mar. 9, 1972, 10,949/72**
**Int. Cl. B01k *3/06*; C01b *7/06***
**U.S. Cl. 204—250** **18 Claims**



An anode for a mercury cell is provided with a perforated current distributor carrying on its upward facing surface an electro-catalytically active coating which is protected from contact by mercury, thereby reducing the incidence of short-circuiting in the cell.

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**3,838,036**

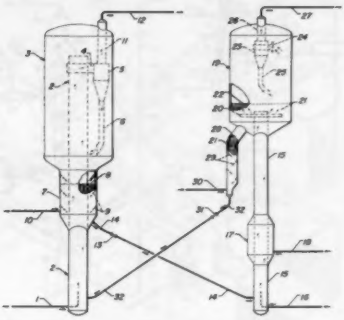
## FLUID CATALYTIC CRACKING PROCESS EMPLOYING A CATALYST HEATING ZONE

**Laurence O. Stine, Western Springs, and Charles L. Hemler, Jr., Mount Prospect, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Filed Nov. 29, 1972, Ser. No. 310,501**
**Int. Cl. B01j *9/20, 11/68*; C10g *11/18***
**U.S. Cl. 208—120** **10 Claims**

A fluidized catalytic cracking process in which a catalyst, which has contacted a feedstock in a reaction zone and has thereby become coke-contaminated, is withdrawn from the reaction zone, passed to a catalyst heating zone, and then passed to a regeneration zone wherein coke is oxidized and from which catalyst is recycled back to the reaction zone.

In the process of our invention a catalyst and operating conditions are purposefully employed such that the amount of coke produced and subsequently oxidized is less than that needed to satisfy the process heat requirements for the desired choice of operating conditions. Process heat requirements for the desired choice of operating conditions. Process heat requirements are met by passing the zone which is fired by fuel less valuable than feedstock



hydrocarbons which would otherwise be converted to coke. Because of the reduced coke yield of this process, which is purposefully lower than that required to fulfill the selected process heat balance requirements, higher yields of more valuable products are realized.

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**3,838,037**

## HYDROCARBON CRACKING WITH AMORPHOUS INORGANIC GEL–VK3

**David E. W. Vaughan, Ellicott City, Philip K. Maher, Baltimore, and Edwin W. Albers, Annapolis, Md., assignors to W. R. Grace & Co., New York, N.Y.**

**No Drawing. Original application May 28, 1971, Ser. No. 148,195, now Patent No. 3,755,345. Divided and this application Mar. 29, 1973, Ser. No. 345,914**
**Int. Cl. C10g *11/04***
**U.S. Cl. 208—120** **3 Claims**

An amorphous high surface area inorganic gel, designated VK3, having the formula

$$0.9 \text{ to } 1.3\ K_2O{:}3 \text{ to } 8\ SiO_2{:}Al_2O_3{:}XH_2O$$

wherein X has a value of 0 to 20.

VK3 possesses a large proportion of its surface area in pores having diameters in the 14 to 50 A. range and finds utility as a hydrocarbon conversion catalyst and as an adsorbent for large organic molecules.

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**3,838,038**

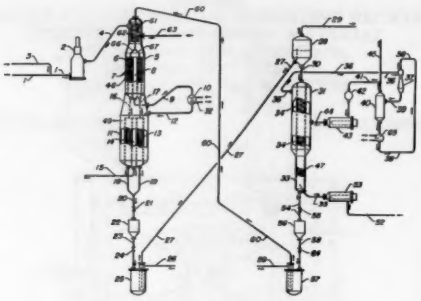
## CONTINUOUS CONVERSION AND REGENERATION PROCESS

**Arthur R. Greenwood, Niles, and Kenneth D. Vesely, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of application Ser. No. 207,869, Dec. 14, 1971, now Patent No. 3,725,249, which is a continuation-in-part of application Ser. No. 860,905, Sept. 25, 1969, now Patent No. 3,647,680. This application Sept. 28, 1972, Ser. No. 293,251**
**The portion of the term of the patent subsequent to Apr. 3, 1990, has been disclaimed**
**Int. Cl. C10g *13/02***
**U.S. Cl. 208—108** **16 Claims**

A method of operating a continuous hydrocarbon process employing catalyst particles wherein catalyst activity is maintained at a predetermined level by continuous regeneration thereof without removal of any reactor from the processing streams. The method includes continuous reduction and sulfiding of the catalyst prior to contact with a reactant stream in one or more reactors in which a

continuous or reasonably continuous input and output of catalyst is regulated. The sulfiding and reduction steps take place in an upper portion of a reaction zone so that those steps occur prior to catalyst being contacted with a reaction zone so that sulfiding occurs prior to catalyst being contacted with a reactant processing stream. The regeneration of the catalyst is continuous and includes a carbon burn-off step.



a reactant processing stream. The regeneration of the catalyst is continuous and includes a carbon burn-off and reduction and sulfiding step which allow the catalyst to be passed back into the reactor system thereby maintaining controlled catalyst activity within the reactor.

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**3,838,039**

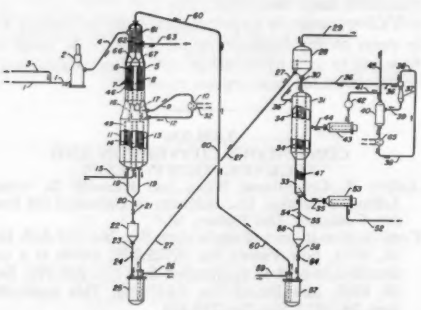
## CONTINUOUS CONVERSION AND REGENERATION PROCESS

**Kenneth D. Vesley, Arlington Heights, and Arthur R. Greenwood, Niles, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.**

**Continuation-in-part of application Ser. No. 207,869, Dec. 14, 1971, now Patent No. 3,725,249, which is a continuation-in-part of application Ser. No. 860,905, Sept. 25, 1969, now Patent No. 3,647,680. This application Sept. 28, 1972, Ser. No. 293,248**

**Int. Cl. C10g *13/02***

**U.S. Cl. 208—108** **16 Claims**



A method of operating a continuous hydrocarbon process employing catalyst particles wherein catalyst activity is maintained at a predetermined level by continuous regeneration thereof without removal of any reactor from the processing streams. The method includes continuous sulfiding of the catalyst prior to contact with a reactant stream in one or more reactors in which a continuous or reasonably continuous input and output of catalyst is regulated. The sulfiding step takes place in an upper portion of

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**3,838,040**

## HYDROCRACKING WITH ZEOLITE IN A SILICA-MAGNESIA MATRIX

**John W. Ward, 19002 Gordon Lane, Yorba Linda, Calif. 92686**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 191,123, Oct. 20, 1971. This application Dec. 17, 1971, Ser. No. 209,439**

**Int. Cl. C10g *13/02***

**U.S. Cl. 208—111** **10 Claims**

Hydrocarbon conversion catalysts having improved physical characteristics as well as increased activity and selectivity containing crystalline zeolitic aluminosilicates and silica-magnesia are prepared by calcining intimate admixtures of the hydrogen precursor-stabilized hydrogen form of the zeolite and silica-magnesia at a temperature of at least about 600° F. sufficient to convert the hydrogen precursor to hydrogen ion. Compositions having particularly attractive hydrocarbon conversion properties contain alumina in addition to the zeolite and silica-magnesia.

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**3,838,041**

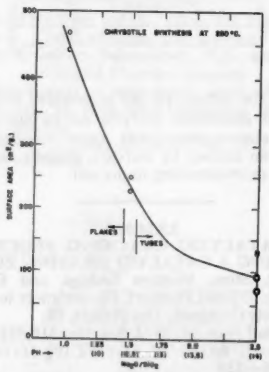
## PROCESS FOR CRACKING HYDROCARBON FEEDS WITH CHRYSOTILE COMPOSITIONS

**Willard H. Sawyer and Harry E. Robson, Baton Rouge, La., assignors to Esso Research and Engineering Company**

**Original application Aug 31, 1970, Ser. No. 68,213, now Patent No. 3,692,700. Divided and this application Mar. 9, 1972, Ser. No. 233,378**

**Int. Cl. C10g *11/04, 13/00***

**U.S. Cl. 208—120** **27 Claims**




A process, and compositions of matter, for cracking hydrocarbon feeds, e.g., at temperatures ranging from about 400° C.–650° C. The feeds are cracked at cracking conditions by contact with catalysts selected from the groups consisting of (a) magnesium chrysotile and (b) magnesium chrysotile, nickel chrysotile and cobalt chrysotile substituted by certain selected concentrations of aluminum. Flake forms of chrysotile are preferred, especially those of surface areas ranging from about 250 $m.^2/g.$–500

$m.^2/g.$, and higher. Particularly useful catalysts are formed by incorporation of these materials in matrices which possess Bronsted acidity.

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**3,838,042**

## DEMETALLIZATION PROCESS USING IRON-CONTAINING CATALYSTS

**Harold Beuther, Gibsonia, Sun W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.**

**No Drawing. Filed Aug. 9, 1972, Ser. No. 279,041**
**Int. Cl. C10g** *17/00*
**U.S. Cl. 208—251 H** **3 Claims**

A process for the demetallization of hydrocarbons by contacting with an iron-containing catalyst under hydrogenation conditions.

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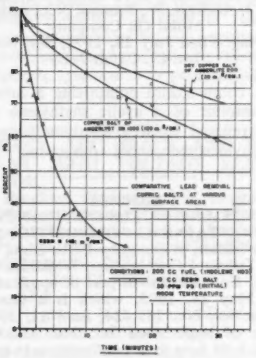
**3,838,043**

## REMOVAL OF RESIDUAL ORGANOLEADS FROM ORGANIC LIQUIDS

**Evan H. Crook, Cherry Hill, N.J., and Paul A. Kittle, Gardenville, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.**

**Filed Sept. 5, 1972, Ser. No. 286,484**
**Int. Cl. C10g** *17/00*
**U.S. Cl. 208—251 R** **24 Claims**




This invention relates to a system for abatement of air pollution as caused by lead compounds in the fuels of internal combustion engines. In another aspect, it relates to selectively removing organoalkyl lead compounds residually present in fuels prior to their carburetion by I.C. engines so as to minimize interference with catalytic muffler performance.

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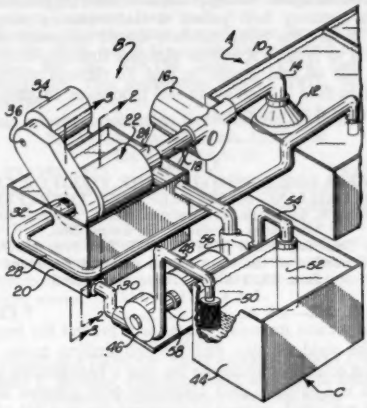
**3,838,044**

## MAGNETIC FILTER AND METHOD OF FILTERING FERROMAGNETIC AND OTHER PARAMAGNETIC PARTICULATE CONTAMINANTS FROM FLUIDS

**Steve J. Hengeli, 4075 Regal Ave., Brunswick, Ohio 44212**

**Filed Aug. 14, 1972, Ser. No. 280,252**
**Int. Cl. B01d** *35/06*
**U.S. Cl. 210—42** **12 Claims**

A magnetic filter for removing ferromagnetic and other paramagnetic particulate material from a fluid, having a rotatable toroid-shaped carrier with magnets disposed along the inner periphery of the toroid, a fluid passageway disposed near the inner periphery of the carrier having an opening permitting the transfer of ferromagnetic and other paramagnetic particulate material from the passageway to the inner peripheral surface of the magnet carrier. A second fluid passageway is disposed near another segment of the inner periphery of the carrier to receive ferromagnetic and other paramagnetic particulate material transferred to it from the carrier. A method of filtering is also disclosed.



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**3,838,045**

## TREATMENT OF AQUEOUS SUSPENSIONS OF ORGANIC WASTE MATERIALS

**Eric J. Clayfield, Mickle Trafford, near Chester, England, assignor to Shell Oil Company, New York, N.Y.**

**No Drawing. Filed June 29, 1972, Ser. No. 267,281**
**Claims priority, application Great Britain, July 15, 1971, 33,216/71**
**Int. Cl. B01d** *11/00*
**U.S. Cl. 210—52** **9 Claims**

The separability of water from aqueous organic waste material suspensions is substantially improved by the addition of an acidified aqueous emulsion containing a mineral oil based liquid and an amino nitrogen or quaternary nitrogen-containing cationic surfactant.

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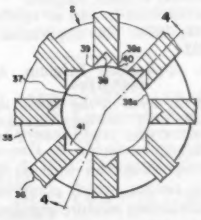
**3,838,046**

## SCREENING DEVICE

**Edwin J. Hunter, Riverside, Calif., assignor to The Toro Company, South Minneapolis, Minn.**

**Continuation of abandoned application Ser. No. 844,577, July 24, 1969. This application June 8, 1973, Ser. No. 368,310**
**Int. Cl. B01d** *35/02*
**U.S. Cl. 210—354** **2 Claims**



A pilot operated piston valve having a reciprocable valve element with a metering port extending therethrough, said port being supplied with fluid from the upstream side of the valve, a metering pin being provided in said

port. The fluid is supplied to said port through a novel strainer or screening device consisting of a plurality of fins extending radially from a central channel or chamber defined by said fins which receives said pin, said fins having grooved inner faces opposite said metering pin through which metering fluid passes to said metering port, the sides of said fins being minutely spaced from said metering pin to provide a minute elongate straining orifice on each side of said groove in said fin through which the metering fluid is admitted to said grooves or channels and then to said metering port.

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3,838,047

**PROCESS FOR IMPROVING THE YIELD OF CLAY AND DRILLING MUDS PREPARED THEREFROM**

**John R. Le Blanc, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.**

**No Drawing. Filed May 5, 1972, Ser. No. 250,734**
**The portion of the term of the patent subsequent to June 11, 1984, has been disclaimed**
**Int. Cl. C10m** *3/22*
**U.S. Cl. 252—8.5 A** **7 Claims**

The present invention relates to a process for improving the yield of clay used in well drilling muds. The process comprises adding to the clay a beneficiating agent which is a mixture of a carboxylic acid polymer and a metal salt which mixture is water soluble at a pH of less than 7.0 wherein the metal is selected from Groups IB, IIB, VIB, VIIB, and VIII of the Periodic Table and lead. Also disclosed herein is a process for drilling a well using the improved drilling muds prepared by the processes of the present invention.

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3,838,048

**POLYVINYLFLUORIDE BEARINGS**

**Thomas E. Hedge, Mentor, and Donald H. Wagner, Painesville, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 737,382, June 17, 1968. This application May 13, 1971, Ser. No. 143,204**
**Int. Cl. C10m** *7/28*
**U.S. Cl. 252—12** **5 Claims**

An abrasion resistant, thermoplastic resinous composition is prepared by dispersing from about 1 to about 100 parts by weight of a solid lubricant in about 100 parts by weight of a vinyl fluoride homopolymer or copolymer of vinyl fluoride and vinyl acetate. Useful solid lubricants include polytetrafluoroethylene, fluorinated ethylene propylene, molybdenum disulfide and tungsten disulfide. The composition forms a dry, abrasion resistant, cohesive lubricant film on a substrate.

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3,838,049

**LUBRICATING COMPOSITIONS**

**Georges Jules Souillard, 7 Avenue Bel Air, and Frederic Francois Van Quaethoven, 42 Avenue de l'Esplanade, both of Wezembeek, Oppem, Belgium**

**No Drawing. Continuation-in-part of application Ser. No. 73,572, Sept. 18, 1970. This application Feb. 5, 1973, Ser. No. 329,902**
**Claims priority, application Belgium, Apr. 4, 1972, 115,914**
**The portion of the term of the patent subsequent to Aug. 21, 1990, has been disclaimed**
**Int. Cl. C10m** *1/18, 1/46, 1/48*
**U.S. Cl. 252—32.7 E** **8 Claims**

Lubricating compositions for internal combustion engines with rotary pistons, which comprise: 90 to 95% by weight of a lubricating mixture containing 15 to 80% of polymer of an olefin containing 4 carbon atoms selected from the group consisting of hydrogenated and non-hydrogenated polyisobutylene, polybutylene and their mixtures, having a mean molecular weight of between 250 and 2000, and 85 to 20% of lubricating oil, 0.5 to 2.5% of anti-wear additive, with the remainder of the compositions being usual additives for 2-stroke and 4-stroke engines.

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3,838,050

**LUBRICANTS AND FUELS CONTAINING ESTER-CONTAINING COMPOSITIONS**

**Clark Ober Miller, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio**

**No Drawing. Continuation-in-part of application Ser. No. 359,952, May 14, 1973, which is a continuation of abandoned application Ser. No. 152,426, June 11, 1971, which is a continuation of abandoned application Ser. No. 12,838, Feb. 19, 1970, which in turn is a continuation-in-part of abandoned application Ser. No. 823,990, May 12, 1969. This application June 11, 1973, Ser. No. 368,782**
**Int. Cl. C10m** *1/24, 1/26*
**U.S. Cl. 252—40.5** **17 Claims**

Ester-containing compositions prepared by reacting a high molecular weight carboxylic acid acylating agent with polyoxyalkylene alcohol demulsifiers for aqueous emulsions. The ester-containing compositions are useful as additives in normally liquid fuels and lubricants.

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3,838,051

**LUBRICANT HAVING THEREIN A METHYLENE OXYAROMATIC COMPOUND**

**Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Company**

**No Drawing. Filed July 22, 1971, Ser. No. 165,378**
**Int. Cl. C10m** *1/20*
**U.S. Cl. 252—52 R** **11 Claims**

Lubricant compositions comprising a lubricant and a stabilizing amount of a cyclic methylene oxyaromatic compound prepared from a dihalomethane and an alkylated polyhydroxybenzenoid compound.

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3,838,052

**LUBRICANTS AND FUELS CONTAINING ESTER-CONTAINING COMPOSITIONS**

**Clark Ober Miller, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio**

**No Drawing. Continuation-in-part of application Ser. No. 360,207, May 14, 1973, which is a continuation of application Ser. No. 152,424, June 11, 1971, which is a division of application Ser. No. 12,838, Feb. 19, 1970, which in turn is a continuation-in-part of application Ser. No. 823,990, May 12, 1969, now abandoned. This application June 8, 1973, Ser. No. 368,382**
**Int. Cl. C10m** *1/26*
**U.S. Cl. 252—56 R** **10 Claims**

Ester-containing compositions prepared by reacting a high molecular weight carboxylic acid acylating agent with polyoxyalkylene alcohol demulsifiers for aqueous emulsions. The ester-containing compositions are useful as additives in normally liquid fuels and lubricants.

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3,838,053

**METHOD OF GROWING RARE EARTH GARNET MATERIAL**

**Michael Kestigian, Stow, Mass., assignor to Sperry Rand Corporation**

**Filed Nov. 27, 1972, Ser. No. 309,862**
**Int. Cl. B01j** *17/18*
**U.S. Cl. 252—62.57** **5 Claims**

Magnetic domain logic elements employ new single crystal ferrimagnetic materials for the propagation of cylindric wall magnetic domains, materials of the

$$Gd_{2.32}Tb_{0.59}Eu_{0.09}Fe_5O_{12}$$

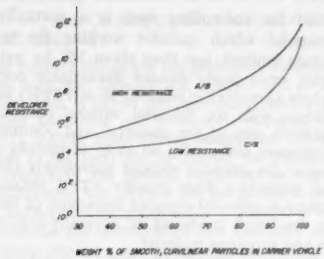
kind made by a novel seed crystal method which comprises pulling a seed crystal from a melt comprising the molten constituents and a barium carbonate-boron oxide flux.

3,838,054

## ELECTROSTATIC DEVELOPER COMPOSITION CONTAINING BOTH ROUGH AND SMOOTH CARRIER PARTICLES

William Trachtenberg, Rochester, John M. McCabe, Pittsford, and George P. Kasper, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1972, Ser. No. 236,724
Int. Cl. G03g 9/02
U.S. Cl. 252—62.1 12 Claims




This invention relates to a particulate carrier vehicle and a dry electrographic developer composition containing such a carrier vehicle. The particulate carrier vehicle described herein contains a mixture of rough-surfaced magnetically responsive particles, e.g., sponge iron powder and smooth-surfaced magnetically responsive particles, e.g., smooth, spherical iron particles.

3,838,055

## HIGH IMPACT, ARC TRACK AND WEATHER RESISTANT HIGH VOLTAGE ELECTRICAL INSULATOR

William M. Rinehart, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 131,800, Apr. 6, 1971. This application Sept. 12, 1972, Ser. No. 288,413
Int. Cl. H01b 3/00
U.S. Cl. 252—63.2 17 Claims

An arc track resistant, high impact, filler free polymeric high voltage electrical insulator which is antichalking under normal operating conditions and in its preferred form comprises an elongated body having integral, spaced skirts and cast from a composition including a 2,2-bis(p-hydroxyphenyl)propane-glycidyl ether polymer, a curing agent for the resin, from 15% to 65% by weight of an aliphatic polyglycidyl ether or ester, and from 0.01% to 3% by weight of an alkylidene bis, tris, or polyphenol. The resin composition is especially adapted to be molded over a supporting member of 2,2-bis(p-hydroxyphenyl) propane-glycidyl ether polymer reinforced with glass fibers. The resulting product has superior dielectric, mechanical and impact strength along with good electrical resistance and weatherability, and is capable of undergoing controlled erosion under high electrical load and temperature conditions before tracking can occur.

3,838,056

## ELECTRICAL DEVICES CONTAINING DIELECTRIC FLUID

Gary A. Vincent, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Nov. 2, 1972, Ser. No. 303,191
Int. Cl. H01b 31/46
U.S. Cl. 252—64 16 Claims

Improved electrical devices, such as transformers and capacitors, containing monochloroalkylsiloxanes as dielectric fluids are disclosed.

3,838,057

## TOILET BARS

Andrew Nicholas Morrison Barnes, Wallington, Wai Ming Chen, Ellesmere Port, Tudor Rickards, Upton, David Arthur Rosser, Wirral, and Ponnuswamy Thurairajan, Port Sunlight, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 60,781, July 30, 1970, which is a continuation-in-part of application Ser. No. 835,739, June 23, 1969, both now abandoned. This application July 3, 1972, Ser. No. 268,396
Claims priority, application Great Britain, June 25, 1968, 30,255/68; July 12, 1968, 33,361/68
Int. Cl. C11d 9/30
U.S. Cl. 252—117 25 Claims

Toilet bars having improved after-wash feel properties comprise at least 15% by weight of polyethyleneoxide quaternary ammonium compounds. The latter must have at least three ethyleneoxide units in a chain and satisfy an expression relating the number of ethyleneoxide units to the number of carbon atoms and the number of quaternary nitrogen atoms.

3,838,058

## STABILIZATION OF PERCHLOROETHYLENE

Norman L. Beckers, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Nov. 17, 1972, Ser. No. 307,643
Int. Cl. B08b 5/00; C07c 17/40; C23g 5/02
U.S. Cl. 252—171 10 Claims

Addition of one of the following chemical components to the stabilizer system used in perchloroethylene for vapor phase degreasing improves its stability:

(1) epibromohydrin
(2) epibromohydrin and allyl glycidyl ether
(3) epibromohydrin and N-ethyl morpholine
(4) epibromohydrin, allyl glycidyl ether and N-ethyl morpholine
(5) N-ethyl morpholine
(6) N-ethyl morpholine and allyl glycidyl ether.

3,838,059

## LIQUID CRYSTAL COMPOSITION

Shi-Yin Wong, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 22, 1972, Ser. No. 228,166
Int. Cl. G02f 1/16
U.S. Cl. 252—299 7 Claims

The operational characteristics (fast responding) are improved for the electrical field induced dynamic scattering mode (DSM) in nematics, and for emulsion storage scattering (ESS) in nematic-cholesteric liquid crystals. For example, small amounts of Squarylium dye material or of tetracyano-p-benzoquinone are particularly favorable dopants. The improved longevity and fast rise and decay characteristics also pertain to application of my doped liquid crystal compositions in photoactivated liquid crystal cells as real time projection displays, stored-image projection displays, and real-time light values for non-coherent modulation of coherent light, including application to electro-optical projection, storage, and memory devices.

3,838,060

## MAGNESIUM ALUMINATE GALLATE PHOSPHOR

Edward E. Kaduk, Lyndhurst, Ohio, assignor to General Electric Company

Continuation-in-part of abandoned application Ser. No. 194,449, Nov. 1, 1971. This application Sept. 18, 1972, Ser. No. 290,166
Int. Cl. C09k 1/36, 1/68
U.S. Cl. 252—301.4 P 4 Claims

Magnesium aluminate gallate phosphors activated by manganese are prepared containing a minor addition of stabilizer ion to avoid brightness loss when the phosphor is heated in the air. The stabilizer addition also permits

major substitution of Al for Ga along with increased manganese activator content resulting in higher powder brightness at room temperature, greater ultraviolet absorption, and a desirable shift in spectral peak of emission response along with the better resistance to oxidation when heated in air. The phosphor is particularly useful in low pressure mercury lamps for reprographic applications.

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**3,838,061**

## METHOD OF PACKAGING OF RADIOACTIVE WASTES

**Daniel Cunz, Les Eymes, Paul Pottier, Manosque, and Daniel Thiery, St. Martin d'Heres, France, assignors to Commissariat a Energie Atomique, Paris, France**

**Filed Mar. 14, 1972, Ser. No. 234,631**

**Claims priority, application France, Mar. 16, 1971, 7109057**

**Int. Cl. C09k** *3/00*

**U.S. Cl. 252—301.1 W** **3 Claims**

Radioactive wastes which have previously been converted to the state of dry powder are incorporated in a resin which is polymerizable at room temperature. The resin is then copolymerized with a monomer in order to obtain a solid which exhibits high leach resistance and long-term retention of radioactivity.

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**3,838,062**

## METHOD FOR THE PREPARATION OF CONCENTRATED ANION-DEFICIENT SALT SOLUTIONS

**Johannes B. W. Kanij, Zevenaar, Arend J. Noothout, Oosterbeek, and Marie E. A. Hermans, Arnhem, Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands**

**No Drawing. Original application Jan. 15, 1971, Ser. No. 106,922, now abandoned. Divided and this application Aug. 24, 1972, Ser. No. 283,291**

**Int. Cl. C01g** *43/00*

**U.S. Cl. 252—301.1 R** **2 Claims**

Concentrated anion-deficient salt solutions are prepared of the actinide oxides $PuO_2$, $UO_2$, $UO_3$ and $U_3O_8$ by dissolving one or more oxides in an aqueous solution of thorium nitrate at a concentration of 4 molar or greater and at a temperature of 60° C. or more. Anion-deficient salt solutions of actinide metals so produced are useful as starting materials for the manufacture of ceramic nuclear fuel particles by the sol-gel process.

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**3,838,063**

## NOVEL COMPOUNDS AND PIGMENT COMPOSITIONS EMBODYING SAME

**Theodore H. Foss, Chicago, Ill., assignor to Lawter Chemicals, Inc.**

**No Drawing. Continuation of abandoned application Ser. No. 49,205, June 23, 1970. This application Mar. 9, 1972, Ser. No. 233,327**

**Int. Cl. C09k** *1/02*

**U.S. Cl. 252—301.2 R** **4 Claims**

This invention is addressed to novel triazines including tetra-2,2,6,6-(2,4-diamino - s - triazino - 6 - ethyl)cyclohexanone, tetra - 2,2,5,5-(2,4-diamino-s-triazino-6-ethyl) cyclopentanone and 3,3-di(2,4-diamino - s - triazino - 6-ethyl)-2-propanone which can be formulated into pigment compositions by co-condensing the novel compounds of the invention with an aryl sulfonamide and an aldehyde to provide a new and improved resinous material for use in daylight fluorescent compositions having improved light stability.

**3,838,064**

## PROCESS FOR DUST CONTROL

**John W. Vogt, South Russell, and James E. Owen, South Euclid, Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 136,267, Apr. 21, 1971. This application Sept. 19, 1972, Ser. No. 287,578**

**Int. Cl. C09k** *3/22*

**U.S. Cl. 252—384** **9 Claims**

A method for controlling dust in a normally-high-dusting material which includes working the material with a minute amount, less than about 1% by weight of the material, or a finely divided fibrillatable polytetrafluoroethylene (hereinafter referred to as PTFE) to form a dry mixture with the material without changing the primary praticle size of the material, and continuing to work the mixture sufficiently so as to essentially negate the dusting of the material without appreciably changing it physical properties. Fine powder PTFE obtained by coagulation of a colloidal aqueous dispersion of the resin is used in the "dry" treatment of normally-high-dusting submicron and superfine material.

Again, the normally-high-dusting material may be mixed with the colloidal aqueous dispersion of the resin, in an amount insufficient to change the essentially dry character of the material and worked, as described herein, to negate dusting of the material.

Alternatively, the fine powder or the colloidal dispersion may be used to slurry the material in a "wet" treatment to facilitate the homogeneous dispersion of the resin; the solids content of the slurry may thereafter be worked in the wet state, preferably as a paste, or worked in an essentially dry state, with a masticating or kneading action, as before.

In another embodiment, for controlling dusting in a normally-high-dusting material, a method is disclosed which includes mixing the material with finely divided fibrillatable PTFE in an amount in the range from about .02 to about 3% by weight in the presence of a liquid processing aid, in which the material may or may not be soluble, and spray drying the solution or slurry so that upon separation of the liquid processing aid, a dry treated solid material is recovered, virtually indistinquishable from untreated material, but characterized by a substantially complete elimination of its normally-high-dusting nature.

Novel dustless compositions are formed by working a normally-high-dusting, submicron or superfine material with a fibrillatable PTFE resin in an amount from about 0.02 to about 1% by weight, based on total solids, until a visual indication of non-dusting is obtained. Even coarse, dusty materials up to about 100 Tyler mesh, which contain fines and superfines are rendered dustless. Dusty materials which include fines in the range from about 10$\mu$ to about 44$\mu$ or superfines up to about 10$\mu$ in size are particularly suitable for dedusting treatment.

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**3,838,065**

## STANDARD SOLUTION OF GLYCEROL

**Werner Lippert, Seeshaupt, Erich Bernt, Munich, Wolfgang Gruber, Garatshausen, and Hans Ulrich Bergmeyer, Tutzing, Germany, assignors to Boehringer Mannheim GmbH, Germany**

**No Drawing. Filed Aug. 9, 1972, Ser. No. 279,116**

**Claims priority, application Germany, Sept. 10, 1971, P 21 45 346.3**

**Int. Cl. G01n** *33/00*

**U.S. Cl. 252—408** **3 Claims**

A stabilized glycerol standard solution, consisting essentially of glycerol in 0.02 to 0.2 N perchloric acid, is

advantageously used to provide a reference standard in analytical methods for the determination of glycerol.

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3,838,066

## METHOD FOR STABILIZING PYROPHORIC MATERIALS IN A CATALYST BED

Lyle M. Lovell, Portage, Ind., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,839

Int. Cl. B01j *11/04, 11/30, 11/76*

U.S. Cl. 252—419 6 Claims

The method comprises the sequential steps of (1) passing an inert gas through the catalyst bed at a bed temperature that is below the ignition temperature of coke and any additional non-pyrophoric material in the bed; and (2) adding a controlled amount of oxygen-containing gas to the inert gas to oxidize the pyrophoric material. Preferably, the method comprises an additional step of maintaining the oxygen partial pressure at about 0.3 to 1 atmosphere of oxygen for a time that is sufficient to eliminate any temperature rise that may occur in the bed when the amount of oxygen-containing gas is increased.

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3,838,067

## CATALYST AND USE THEREOF

Robert S. Barker, Bloomfield, N.J., assignor to Halcon International, Inc.

No Drawing. Continuation-in-part of application Ser. No. 76,249, Sept. 28, 1970, now Patent No. 3,759,840. This application Oct. 24, 1972, Ser. No. 300,026

Int. Cl. B01j *11/82*

U.S. Cl. 252—432 3 Claims

A catalyst useful for the oxidation of organic compounds, particularly vapor-phase oxidation of benzene with molecular oxygen to produce maleic anhydride, comprises the oxides of molybdenum, vanadium, phosphorus, sodium and boron in combination with an oxide of at least one metal of the group consisting of manganese, tin, tungsten and bismuth, and preferably also in combniation with an oxide of at least one member of the group consisting of iron, cobalt and nickel.

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3,838,068

## CATALYST FOR THE PRODUCTION OF CYANOPYRIDINES

Ferdinand Hagedorn, Cologne-Bucheim, Karlfried Wedemeyer, Cologne-Stammheim, Berhard Scherhag, Leverkusen, and Arnold Hausweiter, Dormagen, Germany, assignors to Bayer Aktiengesellschaft

No Drawing. Original application June 27, 1970, Ser. No. 837,305, now Patent No. 3,686,194. Divided and this application Jan. 19, 1972, Ser. No. 219,153

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 8 Claims

An activated tin phosphate catalyst is prepared by reacting a tin compound with a phosphoric acid and activating the tin phosphate formed by adding thereto one or more compounds of metals from the group of molybdenum, bismuth, vanadium, iron and cobalt and thereafter heating the resulting mass. The tin phosphate catalyst contains in the range of 10 to 30 parts by weight of phosphorus and in the range of 30 to 50 parts by weight of tin per 100 parts by weight of tin phosphate. The activated tin phosphate catalyst contains from 1 to 10% by weight of the activating metals based on the weight of the tin phosphate.

3,838,069

## CATALYST FOR USE IN PURIFICATION OF EXHAUST GAS CONTAINING CARBON MONOXIDE

Kazuhide Miyazaki, Tanashi, Michiaki Yamamoto, Fuchu, Shigehiko Kobayashi, Tokyo, and Toshiyuki Sakai, Funabashi, Japan, assignors to Mitsui Mining and Smelting Co., Ltd., Tokyo, Japan

No Drawing. Filed July 27, 1971, Ser. No. 166,558

Claims priority, application Japan, Sept. 29, 1970, 45/84,646; Oct. 14, 1970, 45/90,231

Int. Cl. B01j *11/06, 11/32*

U.S. Cl. 252—456 6 Claims

A catalyst consisting of manganese oxides and lead oxides or one consisting of manganese oxides and bismuth oxides is suitable for the oxidation and purification of exhaust gas containing carbon monoxide, and a catalyst consisting of the mixture of manganese oxides and lead oxides together with metals of such transition elements as copper, iron, cobalt, nickel, etc. or bismuth oxides or the like added thereto and a catalyst consisting of the mixture of manganese oxides and bismuth oxides together with oxides of such alkaline earth elements as magnesium, calcium or barium, oxides of such rare earth elements as yttrium, lanthanum, cerium or neodymium, oxides of aluminum or silicon, oxides of such transition metals as copper, iron, cobalt or nickel, or some transition metals such as copper, iron, cobalt, nickel, etc. added thereto are more suitable for the oxidation and purification of exhaust gas containing carbon monoxide.

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3,838,070

## STABILIZATION OF IRON CATALYSTS

William E. Thomas, Jr., Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,424

Int. Cl. B01j *11/22*

U.S. Cl. 252—472 9 Claims

A method of stabilizing an iron hydrogenation catalyst which exhibits pyrophoric behavior on exposure to an oxygen-containing gas which comprises treating the iron catalyst with an aqueous solution of a stabilizing agent of the group consisting of sorbitol, succinic acid and tetra(hydroxyethyl)ethylenediamine. The stabilized catalyst can subsequently be washed substantially free of stabilizing agent and reactivated for hydrogenation by treating with hydrogen at an elevated temperature and pressure. Alternately the stabilized catalyst can be washed with substantially anhydrous ammonia and used directly for further hydrogenation of adiponitrile.

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3,838,071

## HIGH ADHESION SILVER-BASED METALLIZATIONS

Rajnikant Babubhai Amin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 30, 1972, Ser. No. 268,054

Int. Cl. H01b *1/02*

U.S. Cl. 252—514 16 Claims

In silver and palladium/silver-based metallizations also containing inorganic binder for producing high adhesion conductors on dielectric substrates, improved metallizations for producing conductors of enhanced thermal aged adhesion, additionally comprising certain crystalline inorganic polynary oxides of copper, e.g., $Cu_2Al_2O_4$, $Cu_3TiO_5$, etc. Dielectric bodies having such conductors fired thereon.

3,838,072

## MANUFACTURE OF FREE FLOWING PARTICULATE DETERGENT CONTAINING NONIONIC SURFACE ACTIVE COMPOUND

**Frank R. Smith, Jr., North Plainfield, Walter A. Di Salvo, North Arlington, and Edward J. Kenney, Bernardsville, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.**

Filed Mar. 15, 1971, Ser. No. 124,111
Int. Cl. C11d *1/22, 1/83, 11/00*
U.S. Cl. 252—540 16 Claims

Particulate detergent compositions which are free-flowing and not tacky are made by spray drying an aqueous crutcher mix to produce base detergent beads containing synthetic anionic organic detergent and sodium silicate, usually with other builders and adjuvants, and spraying over the surfaces of the base particles, while in motion, from about 2 to 20% by weight of the detergent composition of droplets of a higher linear alkoxy poly-lower alkoxy lower alkanol nonionic compound in which the poly-lower alkoxy lower alkanol content of the nonionic compound is from 39 to 60% by weight. The nonionic compound, which has surface active properties, is usually applied as a warm or hot liquid onto freshly sprayed and still warm or hot detergent base beads. Preferably, the nonionic compound is sprayed onto the base beads together with a nonionic detergent which it aids in penetrating into the bead, thereby improving product flow characteristics and diminishing tackiness.

3,838,073

## POLY(FLUOROALKOXYPHOSPHAZENE) HOMOPOLYMERS

**Selwyn H. Rose, Beachwood, and Kennard A. Reynard, Mentor, Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated**

No Drawing. Filed Aug. 28, 1972, Ser. No. 284,200
Int. Cl. C08g *33/16, 33/02*
U.S. Cl. 260—2 P 8 Claims

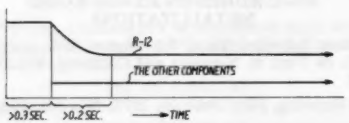
Poly(fluoroalkoxyphosphazene) polymers in which each substituent bonded to the phosphorus atoms contains four to twelve carbon atoms are claimed. The polymers are prepared from poly(dichlorophosphazene) and a fluoroalkoxide salt. The polymers are plastics with exceptional solvent and chemical resistance and are useful as coatings and films.

3,838,074

## PROCESS FOR PREPARING POLYURETHANE FOAM

**Yoichi Hoshino, Tokyo, Kotaro Honda and Chihito Funayama, Yokohama, and Goro Tanaka, Yamato, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan**

Filed Jan. 5, 1973, Ser. No. 321,471
Claims priority, application Japan, Jan. 10, 1972, 47/5,107
Int. Cl. C08g *22/46*
U.S. Cl. 260—2.5 BD 8 Claims




A process for preparing a polyurethane foam by a frothing process by mixing a polyol, a polisocyanate, a primary foaming agent, a secondary foaming agent and a catalyst in a helix-mixer which comprises introducing a first component comprising a primary foaming agent to the helix-mixer and then introducing a second component to said mixer which second component comprises said polyol, polyisocyanate, secondary foaming agent and catalyst, wherein the initial ratio of the feed rate of said first component to that of said second component at the initiation of the supply of said second component is at least 1.5 times the normal ratio of the feed rate of said first component to the feed rate of said second component under normal operating conditions, and wherein said primary foaming agent is supplied to said mixer in a quantity as required by said initial ratio during said period preceding the introduction of said second component.

3,838,075

## PROCESS FOR THE PRODUCTION OF HYDROPHILIC FOAM PLASTICS

**Werner Dietrich, Helmut Reiff, Karlheinz Andres, and Johannes Niggemann, Cologne, and Ernst Roos, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

No Drawing. Filed Feb. 12, 1973, Ser. No. 331,936
Claims priority, application Germany, Feb. 17, 1972, P 22 07 361.6
Int. Cl. C08g *22/16, 22/44*
U.S. Cl. 260—2.5 AD 6 Claims

Hydrophilic polyurethane foams well-suited for use as substrate for the propagation and cultivation of plants are prepared by the isocyanate polyaddition process by reacting a polyisocyanate with compounds containing at least two hydrogen atoms reactive with —NCO groups wherein from about 5% to about 100% by weight based on the weight of active hydrogen containing compound of a betaine is incorporated in the reaction mixture, said betaine containing at least one group that is reactive with —NCO groups.

3,838,076

## POLYURETHANE FOAMS FROM PARTIALLY AMINATED POLYETHER POLYOLS

**Philip Hotchkiss Moss and Michael Cuscurida, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.**

No Drawing. Filed Mar. 12, 1973, Ser. No. 339,988
Int. Cl. C08g *22/44, 22/14*
U.S. Cl. 260—2.5 AQ 5 Claims

Cellular polyurethane foams are prepared by reacting, in the presence of a blowing agent, an organic polyisocyanate and a polyoxyalkylene resin having a functionality of from 2 to 8 and an equivalent weight of from about 900 to about 2800. The terminal groups of the polyoxyalkylene resins are from 15 to about 55 amino groups, with the remaining functional groups being hydroxyl groups.

3,838,077

## HYDROLYSIS PROCESS FOR POLYMER-MODIFIED CELLULOSE FIBERS

**Henry Wilbert Hoftiezer, Rothschild, and August Henry Tilloson, Schofield, Wis., assignors to American Can Company, Greenwich, Conn.**

No Drawing. Filed July 10, 1972, Ser. No. 270,324
Int. Cl. C08f *25/00, 27/14*
U.S. Cl. 260—17.4 GC 7 Claims

This invention relates to an improved procedure for carrying out an alkaline hydrolysis of polymeric nitriles graft polymerized on fibrous cellulose to obtain cellulose having chemically attached thereto alkali metal polycarboxylate salts in a form which may be readily dried and reduced to a fine powderous state which is readily redispersable in aqueous media. In a particular aspect thereof, the invention relates to an improved method for hydrolysis of polyacrylonitrile-grafted cellulose fibers which, on alkaline hydrolysis carried out by conventional procedures in relatively dilute caustic, are converted into a highly viscous suspension of the cellulose fibers having alkali metal polyacrylate grafted therein and thereon. This viscous material has been found to be extremely difficult to dry to a substantially water-free state, and it is to this problem that the present invention is directed.

3,838,078

**ABIETATE MODIFIED POLYSULFIDE POLYMERS AS ADHESIVE ADDITIVES FOR LIQUID POLYSULFIDE POLYMER BASED ADHESIVE COMPOSITIONS**

Jose L. Villa, Heightstown, N.J., assignor to Thiokol Corporation, Bristol, Pa.

No Drawing. Original application May 12, 1972, Ser. No. 252,646. Divided and this application July 6, 1973, Ser. No. 377,160

Int. Cl. C08c *9/18*

U.S. Cl. 260—24 2 Claims

Polysulfide and polyester polymers modified with abietic acid and polysulfide polymers modified with epoxy groups are effective as adhesive additives for liquid polysulfide polymer based compositions used as sealants or bonding agents on various substrates such as glass or aluminum.

3,838,079

**PRESSURE SENSITIVE ADHESIVE COMPOSITION COMPRISING CARBOXYLATED POLYMER**

Yujiro Kosaka, Masaru Uemura, Tokio Fujiki, and Mitsutaka Saito, Shin Nanyo-shi, Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin Nanyo-shi, Yamaguchi, Japan

No Drawing. Filed Sept. 29, 1971, Ser. No. 184,920

Claims priority, application Japan, Aug. 9, 1971, 46/59,628

The portion of the term of the patent subsequent to July 31, 1990, has been disclaimed

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 5 Claims

A pressure sensitive adhesive composition is formed from 30 to 70% by weight, of a carboxylated polymer product obtained by copolymerizing maleic anhydride and an alkyl acrylate in contact with an ethylene vinyl acetate copolymer, and from 70 to 30%, by weight based on the total composition, of a tackifier and a viscosity reducing agent.

3,838,080

**WAXY COMPOSITION FOR PREVENTING RUBBERY SUBSTANCE FROM OZONE DETERIORATION**

Toshihiko Shinomura, 2847 Kamiyabe-cho, Totsuka-ku, Yokohama, Japan, and Hiroshi Uemura, 1635 Takagasaka, Machida, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,635

Claims priority, application Japan, Dec. 28, 1970, 46/119,997

Int. Cl. C08f *45/52*; C08h *9/06*

U.S. Cl. 260—28.5 B 4 Claims

A waxy composition containing 40 percent or more by weight of normal chain hydrocarbons having from 34 to 40 carbon atoms, a method of utilizing said waxy composition for preventing rubbery substance from ozone deterioration, and a rubbery article thus prevented from ozone deterioration. The method comprises steps of mixing said waxy composition with raw rubber, subsequently vulcanizing the mixture, and leaving the vulcanized matter as it is for letting the waxy composition bloom on the surface of the matter. Results of some tests are disclosed.

3,838,081

**TIRE CORD ADHESIVE**

Jerald R. Harrell, Anestis L. Logothetis, and John J. Verbanc, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application July 9, 1969, Ser. No. 840,511, now Patent No. 3,679,627, which is a continuation-in-part of abandoned application Ser. No. 764,328, Oct. 1, 1968. Divided and this application May 30, 1972, Ser. No. 257,667

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 1 Claim

An adhesive composition hydroxylated alpha-olefin/non-conjugated diene polymer having hydroxylated side chains in admixture with a phenol-formaldehyde resin.

3,838,082

**POLYTETRAFLUOROETHYLENE COATINGS CONTAINING WATER SOLUBLE POLYHYDROLYZABLE COMPOUND FOR GLASS FABRICS**

David Allen Sauer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 146,837, May 25, 1971. This application May 15, 1972, Ser. No. 253,338

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 F 9 Claims

Coated glass fabric of improved flex life is provided, the coating on the fabric comprising (a) unsintered polytetrafluoroethylene having a specific melt viscosity of at least $1\times10^9$ poises at 380° C. and (b) condensation product of polyhydrolyzable compound which is a silane or a compound of tetravalent titanium, zirconium, or tin. The coating can also contain a water repellent additive which prevents water from soaking into the fabric. The coating is present on the glass fabric either as a blend of (a) and (b) or as a basecoat of (b) and topcoat of (a) on the glass fabric. The blend coating can be obtained by applying a dispersion of (a) which contains (b) still in the polyhydrolyzable state, and optionally, the water repellent additive, to the fabric, followed by drying without sintering the polytetrafluoroethylene.

3,838,083

**OIL- AND WATER-REPELLENT COMPOSITION OF PERFLUOROALKYL ACRYLATES OR METHACRYLATES**

Hiroshi Ukihashi, Tokyo, and Kazusuke Kirimoto and Hiroaki Kojima, Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,517

Int. Cl. C08f *15/40, 45/24*

U.S. Cl. 260—29.6 F 6 Claims

An improved oil- and water-repellent copolymer composition which comprises at least 25 weight percent of a fluoroalkyl monomer, 5–50 weight percent vinylchloride and a diester monomer having the formula:

$$R_1O_2C—CH=CH—CO_2R_2$$

wherein $R_1$ and $R_2$ may be the same or different and represent $C_{1-18}$ alkyl groups.

3,838,084

**SOLID WATER-SOLUBLE ADHESIVE COMPOSITION IN RELATIVE RIGID FORM COMPRISING ADHESIVE COMPONENT AND NOVEL ISETHIONIC ACID ESTER MATRIX BUILDER**

Dwight D. Hutson, Rockville, and Charles A. Rader, Laurel, Md., assignors to The Gillette Company, Santa Monica, Calif.

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,555

Int. Cl. C09j *3/12*

U.S. Cl. 260—29.6 Z 22 Claims

This invention relates to a coherent, self-sustaining adhesive composition which will resist slumping and change in form at temperatures up to as high as about 50° C. and being adapted to be readily spread upon paper-like surfaces to form an adhesive film thereon by being drawn thereover by light hand applied pressure without crumbling, the adhesive composition being a skeleton structure of interlocked elongated crystals of a matrix builder which is virtually water-insoluble, at room temperature, and is the salt of a compound having the formula RCOO—R'—$SO_3H$, where R is aliphatic having from 7 to 35 carbon atoms and R' is lower alkylene, said skeleton structure forming a matrix for an aqueous medium containing a water-soluble synthetic resin adhesive. This invention also relates to a method for producing the adhesive composition described above which includes the step of forming a mixture of an

aqueous solution of a water-soluble adhesive and a matrix builder, the formula of which is given above; heating the mixture to a temperature between that at which a significant amount of the matrix builder dissolves and the boiling point of the compositions; slowing mixing the composition to form a homogeneous slurry or paste without formation of a significant amount of air bubbles; cooling the composition to about a temperature at which the matrix builder is substantially insoluble in water; and curing the matrix builder at between said insolubility temperature and a temperature 15° C. lower than said insolubility temperature.

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3,838,085

## PIGMENTED ASBESTOS LATEX EMULSION PAINT COMPOSITION

**John L. Myers, Lewiston, N.Y., and Richard W. Lasher, Palos Verdes Peninsula, and Russell D. James, La Mirada, Calif., assignors to Union Carbide Corporation, New York, N.Y.**

**Continuation-in-part of abandoned application Ser. No. 34,796, May 5, 1970. This application Oct. 24, 1972, Ser. No. 300,193**

**Int. Cl. C08f *45/24***

**U.S. Cl. 260—29.6 R** **16 Claims**

Premium latex paints are disclosed exhibiting superior opacity and brightness characteristics, including dispersed and liberated short chrysotile asbestos fibers having anionic pigment particles electrostatically attached at discrete points along the length of the fibers.

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3,838,086

## ISOLATING RUBBERS

**Hildegard Schnöring, Wuppertal-Elberfeld, Gottfried Pampus, Leverkusen, and Rudolf Mayer-Mader, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany**

**No Drawing. Filed Mar. 26, 1973, Ser. No. 344,914**

**Claims priority, application Germany, Mar. 29, 1972, P 22 15 413.8**

**Int. Cl. C08b *21/32*; C08c *11/22, 11/36***

**U.S. Cl. 260—30.6 R** **8 Claims**

A process for isolating rubbers from their aqueous dispersions (latices) comprising adding methyl cellulose to an aqueous rubber dispersion in a quantity of from 0.1 to 10% by weight based on the rubber, and removing the water present.

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3,838,087

## RESIN MANUFACTURE

**Dietrich Pirck, Reinbek, Gundolf Fuchs, Meilsen, and Gerhard Sachse, Hamburg, Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany**

**No Drawing. Filed July 14, 1972, Ser. No. 272,091**

**Claims priority, application Germany, July 26, 1971, P 21 37 239.4; Dec. 30, 1971, P 21 65 491.1**

**Int. Cl. C08f *41/12, 45/28***

**U.S. Cl. 260—33.6 UA** **9 Claims**

The present invention relates to a process for producing a lacquer resin component for baking varnishes wherein esterified-alkoxylated copolymers are produced in a sequential three stage process comprising copolymerizing vinyl aromatic hydrocarbon and maleic acid anhydride and sequentially half esterifying and alkoxylating the resultant copolymer. All three stages of the process are conducted in a continuous phase in the presence of a dispersing agent and a high boiling liquid hydrocarbon solvent medium, said hydrocarbon being preferably of a substantially non-aromatic nature, said dispersing agent being a copolymer of (1) esters formed from alpha, beta-unsaturated carboxylic acids and long chain aliphatic alcohols in the range of from $C_{10}$ to $C_{20}$ cadbons or mixtures thereof and (2) ethylenically unsaturated copolymerizable compounds.

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3,838,088

## WIRE ENAMEL BASED ON AMIDE-IMIDE-HYDANTOIN POLYMERS

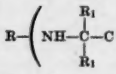
**Edmund J. Zalewski, John L. Simonian, and John T. Keating, Schenectady, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.**

**No Drawing. Continuation of abandoned application Ser. No. 166,594, July 27, 1971. This application Feb. 9, 1973, Ser. No. 331,077**

**Int. Cl. C08g *51/34***

**U.S. Cl. 260—33.4 P** **25 Claims**

Amide-imide-hydantoin polymers are prepared from trimellitic anhydride, a diisocyanate and reacting the isocyanate terminated amide-imide with a glycine derivative of the formula



where R is aromatic, $R_1$ are the same or different and are hydrogen or alkyl, $R_2$ is dialkylamino, alkoxy or aroxy and $x$ is an integer from 2 to 4. A portion of the trimellitic anhydride can be replaced by a dicarboxylic acid, a dianhydride or a tribasic acid. The products are soluble in cresol type solvent.

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3,838,089

## SELF-EXTINGUISHING ORGANOPOLYSILOXANE COMPOSITION

**Anthony Enrico Pepe, Hacienda Heights, Calif., assignor to Stauffer Chemical Company**

**No Drawing. Continuation of application Ser. No. 181,255, Sept. 16, 1971, which is a continuation of application Ser. No. 746,307, July 22, 1968, both now abandoned. This application Jan. 26, 1973, Ser. No. 326,918**

**Int. Cl. C08g *51/30***

**U.S. Cl. 260—33.8 SB** **10 Claims**

A self-extinguishing elastomeric organpolysiloxane composition comprising (1) a curable organopolysiloxane, (2) a halogenated organic compound containing at least 35 percent by weight of halogen, said halogenated compound being present in an amount to provide a composition having a halogen content of from 15 to 50 percent by weight based on the weight of organopolysiloxane, and (3) a metallic compound, wherein the cation of the metallic compound is selected from the group consisting of antimony, arsenic, and bismuth and the anion is selected from the class consisting of oxides, halides, and oxyhalides.

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3,838,090

## POLYMERS OF UNSATURATED HYDROCARBONS STABILIZED WITH RUTHENIUM TETROXIDE

**Richard J. Dauksys, Bellbrook, Ohio**

**(49 Nuthatch Knob Road, Glastonbury, Conn. 06033)**

**No Drawing. Filed Apr. 2, 1973, Ser. No. 347,242**

**Int. Cl. C08f *45/56, 45/62*; C08g *45/56***

**U.S. Cl. 260—45.75 R** **3 Claims**

The ultraviolet light stability of polymers of unsaturated hydrocarbons is improved by immersing the polymers in a solution of ruthenium tetroxide in carbon tetrachloride. After exposure to ultraviolet light, the polymers so treated retain their mechanical properties to a substantial degree, and crazing or cracking of the polymers is virtually eliminated.

3,838,091
**LAMINATED SAFETY GLASS AND INTERLAYER THEREFOR**

Isawo Kanno, Kyoto, and Toshiyuki Takashima and Yoshiyuki Bokuda, Shiga-ken, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,612
Claims priority, application Japan, Mar. 30, 1971, 46/19,491
Int. Cl. C08f *45/36*
U.S. Cl. 260—31.2 R 7 Claims

An interlayer for laminated safety glass comprising (1) a mixture of a plasticized polyvinyl acetal resin with a specific norbornane compound or (2) a sheet of the plasticized polyvinyl acetal resin and a coating of the norbornane compound adhering thereto, and a laminated safety glass comprising at least two sheets of glass bonded together with said interlayer.

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3,838,092
**DUSTLESS COMPOSITIONS CONTAINING FIBEROUS POLYTETRAFLUOROETHYLENE**

John W. Vogt, South Russell, and James E. Owen, South Euclid, Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 136,268, Apr. 21, 1971. This application Dec. 20, 1972, Ser. No. 316,872
Int. Cl. C08f *45/04*
U.S. Cl. 260—33.6 F 6 Claims

A process for the control of dust generated by normally dusty solid particulate material smaller than 10 mesh in size, comprising mixing from about 0.02 to less than 1.0 percent, and preferably from about 0.02 to about 0.75 percent, by weight, fibrillatable polytetrafluoroethylene (hereinafter referred to as PTFE) with said material to form an intimate mixture and then working the mixture sufficiently at a temperature above 20° C., but below the transition point of said PTFE to form enough PTFE fibers to produce a weak, essentially dustless agglomerate from said dusty material.

A coherent, weak agglomerated dustless solid particulate mass lacking resistance to pressure of mechanical shock and simultaneously pliable and friable at ambient temperatures, yet visually distinguishable from the normally dusty material from which it is formed. The agglomerate is formed from a mixture of dusty discrete particles in the size range from less than about 1 micron to about 2000 microns, and fibrillatable PTFE in an amount from about 0.02, but less than 1 percent by weight, based on total solids, by working the mixture in a dry or relatively dry state with a working action in an unconfined zone at a temperature in excess of 20 C., but below the sintering temperature of PTFE, without changing the primary particles size range of the material.

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3,838,093
**METHOD AND COMPOSITION FOR IMPROVING ADHESION BETWEEN ADHESIVES AND POLYESTER OR THERMOPLASTIC SUBSTRATES**

William J. Owston, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,818
Int. Cl. C08g *51/30, 51/28*
U.S. Cl. 260—33.8 UB 10 Claims

The adhesion obtained between an adhesive of the class of polymerizable liquid ethylenically unsaturated compounds containing a single terminal $>C=CH_2$ group and a solid polyester or thermoplastic substrate is improved by treating the substrate with a solution of a partial urethane adduct prior to application of the adhesive. A solution of the partial urethane adduct is also described and claimed herein.

3,838,094
**MOLDING COMPOSITION AND MOLDED PRODUCT**

Christian R. Sporck, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 23, 1973, Ser. No. 353,458
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP 7 Claims

Molding compositions for electrical devices such as integrated circuit devices, and resulting product. Molding compositions comprise epoxidized novolac prepolymer; novolac prepolymer as cross linking agent, catalyst (preferably an imidazole) which is free of ionic components likely to detract from insulating characteristics and a filler in the form of finely ground fused silica which has been surface treated to remove all or substantially all hydrophilic groups.

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3,838,095
**FOUNDRY SAND COATED WITH A BINDER CONTAINING NOVOLAC RESIN AND UREA COMPOUND**

Calvin K. Johnson, Palos Heights, and Robert S. Craig, Hoffman Estates, Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,605
Int. Cl. C08g *51/04*
U.S. Cl. 260—38 13 Claims

A resin coated sand consisting essentially of

(a) particles of sand coated with from about 1% to 8%, by weight of the sand, of phenol-formaldehyde novolak resin;
(b) a curing agent; and
(c) from about 1% to about 5%, by weight of the phenol-formaldehyde novolak resin, of a urea compound.

The sands are especially useful for forming foundry cores and molds.

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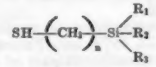
3,838,096
**GLASS FIBER-REINFORCED PLASTICS AND PROCESS FOR PRODUCING THE SAME**

Takeshi Nagasawa, Katsumasa Kuroiwa, Kouichi Narita, Reiko Hashimoto, and Kohji Tamaki, Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima-shi, Japan

Filed Dec. 6, 1971, Ser. No. 205,129
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R 13 Claims

A glass fiber-reinforced plastic which comprises a glass fiber, an unsaturated polyester resin and a novel reaction product of a polybutadiene having a 1,2-structure content of about 50 mole percent to substantially 100 mole percent with a mercapto-organosilane represented by the general formula,



wherein $R_1$, $R_2$ and $R_3$, which may be same or different, are individually a hydrolyzable group capable of reacting with glass fiber, selected, for example, from the group consisting of alkoxy groups, acetoxy groups and halogens; and $n$ is an integer of 1 to 4, said reaction product being present at the interface between said glass fiber and said resin, and said resin being cured. In this plastic, the adhesion between the glass fiber and the unsaturated polyester resin is greatly improved, by the above-mentioned reaction product present at the interface between said two materials.

3,838,097

## PROCESS FOR MAKING POLYETHERIMIDES AND PRODUCTS DERIVED THEREFROM

Joseph G. Wirth and Darrell R. Heath, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,164
Int. Cl. C08g 20/32
U.S. Cl. 260—49 39 Claims

Polyetherimides are prepared from the reaction of a bis(nitrophthalimide) with an alkali metal salt of a divalent carbocyclic aromatic radical in the presence of an appropriate solvent. The invention also covers the novel polyetherimides prepared in accordance with the above-described process.

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3,838,098

## MOLDABLE COMPOSITIONS BASED ON TRANS-1,4-POLYMERS OF ISOPRENE

Eric George Kent, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Filed Oct. 26, 1972, Ser. No. 300,983
Claims priority, application Canada, Dec. 20, 1971, 130,461
Int. Cl. C08f 45/04
U.S. Cl. 260—41.5 R 9 Claims

Moldability of raw compounds based on trans-1,4 polymer of isoprene and hardness of cured molded articles made therefrom are improved by mixing therewith a crystalline copolymer of isoprene and acrylonitrile.

The compounds are suitable for the production of improved golf ball covers.

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3,838,099

## UV STABILIZING SYSTEM FOR POLYMERIC MATERIALS COMPRISING PHENYL BENZOATE AND NICKEL OR COBALT COMPLEXES OF PARTIALLY FLUORINATED BETA DIKETONE

Ronald D. Mathis, Taylors, S.C., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,044
Int. Cl. C08f 45/58
U.S. Cl. 260—45.75 N 12 Claims

Ultraviolet light stabilizers for polymers comprising mixtures of hydroxy-substituted phenyl benzoates and metal complexes of partially fluorinated beta diketones are described. A preferred embodiment includes polyolefin compositions containing 2',4'-di-*t*-butylphenyl 3,5-di-*t*-butyl-4-hydroxybenzoates and a nickel complex of 1,1,1-trifluoro-7-methyl-1,4-octanedione.

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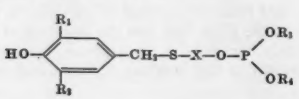
3,838,100

## REACTION PRODUCTS OF PHENOL DERIVATIVES WITH PHOSPHOROUS COMPOUNDS AS STABILIZERS FOR POLYMERS

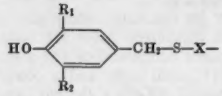
Heinz Eggensperger, Gadernheim uber Bensheim, Volker Franzen, Heidelberg, and Hans Stephen, Bensheim, Bergstrasse, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of application Ser. No. 155,623, June 22, 1971, now Patent No. 3,784,650, which is a continuation-in-part of application Ser. No. 748,619, July 30, 1968, now Patent No. 3,655,833. This application Mar. 1, 1973, Ser. No. 336,966
Claims priority, application Germany, Aug. 12, 1967, P 16 43 880.5
Int. Cl. C08f 45/58
U.S. Cl. 260—45.95 C 13 Claims

Novel compounds having the formula



wherein $R_1$ is selected from the group consisting of hydrogen and alkyl radicals having 1 to 6 carbon atoms, $R_2$ is an alkyl radical having 1 to 6 carbon atoms, X is selected from the group consisting of alkylene radicals having 1 to 6 carbon atoms and carboxyl interrupted alkylene radicals having 1 to 6 carbon atoms, and $R_3$ and $R_4$ are selected from the group consisting of alkyl, aryl, alkaryl, arylalkyl, alkoxyalkyl, alkoxyaryl, aryloxyalkyl, chloroalkyl, chloroaryl, chloroalkaryl, chloroarylalkyl and



wherein $R_1$, and $R_2$ and X are as defined above and are useful as stabilizers for polymeric compositions.

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3,838,101

## REACTIONS BETWEEN AN ORGANIC DIIMIDE AND AN EPOXY RESIN WITH A CHROMIUM III TRICARBOXYLATE CATALYST

Roger B. Steele, Fair Oaks, Arthur Katzakian, Jr., and Joseph J. Scigliano, Sacramento, and Edward E. Hamel, Roseville, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 28,122, Apr. 13, 1970. This application Nov. 21, 1972, Ser. No. 308,611
Int. Cl. C08g 30/14
U.S. Cl. 260—47 EN 18 Claims

This patent discloses and claims the reaction of oxirane-containing compounds with primary cyclic imide-containing compounds, at temperatures of from about 0° C. to 225° C., in the presence of active chromium II tricarboxylate salts which have unoccupied coordination sites.

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3,838,102

## REMOVAL OF METALLIC CATALYST RESIDUE FROM POLYPHENYLENE ETHERS

James G. Bennett, Menands, and Glenn D. Cooper, Delmar, N.Y., assignors to General Electric Company

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,160
Int. Cl. C08g 23/18
U.S. Cl. 260—47 ET 20 Claims

Metallic catalyst residues are removed from reaction solutions containing polyphenylene ethers produced by an oxidative coupling of a phenol in the presence of an oxygen-containing gas and a metal-amine complex catalyst. Removal of the metal component is effected by contacting the solution with a compound capable of selectively complexing with the metal to form a water soluble compound, removable by subsequent liquid-liquid extraction with an aqueous medium. The process is less expensive than prior art procedures, provides solutions which are more efficiently decolorized, and reduces the metallic residue content of the polyphenylene ether to levels lower than other commercially acceptable methods.

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3,838,103

## CURABLE ARALKYLENE/PHENOL RESINS AND THE PROCESS OF CURING SAID RESINS USING SALICYLIC ACID

Alfred Gerald Edwards, Stourport-on-Severn, England, assignor to Albright & Wilson Limited, Oldbury, near Birmingham, Warwickshire, England

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,584
Claims priority, application Great Britain, July 9, 1971, 41,691/71
Int. Cl. C08g 37/06
U.S. Cl. 260—52 5 Claims

The cure rate of xylok resins can be accelerated by admixing certain acids with the hexamine curing agent normally employed. Acids which have so far been found to be suitable include a variety of organic acids. Salicylic acid being particularly useful.

3,838,104

## NOVEL OIL- AND WATER-REPELLENT COMPOSITION OF POLYMERS OF FLUOROALKYL MONOMERS AND DIACETONE ACRYLAMIDE OR DIACETONE METHACRYLAMIDE

Takao Hayashi and Hiroaki Kojima, Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

No Drawing. Filed Sept. 21, 1972, Ser. No. 290,984

Int. Cl. C08f 3/62

U.S. Cl. 260—63 HA 8 Claims

An oil- and water-repellent composition which comprises an oil- and water-repellent copolymer prepared by copolymerizing at least 25 weight percent of a fluoroalkyl monomer and 0.2–20 weight percent of diacetoneacrylamide, diacetonemethacrylamide or alkylol derivatives of diacetoneacrylamide or diacetonemethacrylamide.

3,838,105

## POLYURETHANE PREPARED FROM HYDROXY POLY(METHYLENE OXIDE), POLYESTER, AND GLYCOL AND HAVING IMPROVED HYDROLYTIC STABILITY

Armand Edward Brachman, Allentown, Pa., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed May 31, 1972, Ser. No. 258,160

Int. Cl. C08g 22/14

U.S. Cl. 260—75 NP 6 Claims

Polyurethanes having excellent hydrolytic stability and being especially adapted for injection molding are prepared by reacting a mixture of a hydroxyl terminated polyester having a molecular weight between 600 and 800 and a hydroxyl poly(alkylene oxide) having a molecular weight from about 800 to 2500 and an aliphatic glycol, said mixture having an average molecular weight of about 360 to about 470, with a diisocyanate in molar amounts substantially equal to the total moles of hydroxyl polyester, polyether and aliphatic glycol.

3,838,106

## MANUFACTURE OF UNSATURATED POLYESTERS

Albert R. Shuki, Summit, and Dennis E. Smola, Cuyahoga, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

No Drawing. Filed July 20, 1972, Ser. No. 273,473

Int. Cl. C08g 17/007

U.S. Cl. 260—75 M 13 Claims

This invention relates to a non-catalytic process for the manufacture of curable unsaturated polyesters comprising reacting (1) maleic anhydride with a polyhydric alcohol which may be a dihydric alcohol or a combination of a dihydric alcohol and a polyhydric alcohol containing three or more hydroxyl groups, and (2) further reacting the intermediate ester so-formed with an aromatic anhydride and an oxirane compound.

3,838,107

## METHOD OF PREPARING CRYSTALLIZED POLYESTERS

Rene Lemaistre, Autreville, and Francois Juhasz, Chauny, France, assignors to Rhone-Progil, Courbevole, France

No Drawing. Filed Sept. 17, 1973, Ser. No. 398,235

Claims priority, application France, Sept. 21, 1972, 7233438

Int. Cl. C08g 17/10

U.S. Cl. 260—75 T 8 Claims

The preparation of crystallized polyesters of polyethylene glycol fumarate, succinate and/or adipate, in which the ratio of adipic acid and succinic acid to fumaric acid is within the range of 0 to 25:75 in which the polyester has a molecular weight within the range of 1000 to 2000, comprising adding a substance capable of initiating crystallization of the polyester at a temperature within the range of 120° to 180° C. in a first step, holding the polyester at a temperature not less than 100° C. but below the temperature of the polyester in the first step while in the presence of polyester micro-crystals having a composition analogous to that of the polyester to be crystallized, and holding the polyester in a layer having a thickness within the range of 5 to 20 mm. for from 12 to 60 minutes at a temperature within the range of 50° to 70° C.

3,838,108

## ISOCYANATE EXTENDED POLYMERS AND THE FORMATION OF BLOCK COPOLYMERS

William L. Hergenrother and Richard J. Ambrose, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,161

Int. Cl. C08g 22/00, 41/04

U.S. Cl. 260—77.5 CR 86 Claims

Polymers of anionically polymerized monomers are made with an organo alkali metal initiator and then reacted with either polyisocyanates or polyisothiocyanates which remove the alkali atoms and form a novel polymeric composition containing isocyanate or isothiocyanate terminated polymers. These polymers may then be reacted with compounds containing an isocyanate or an isothiocyanate reactive group. The isocyanate or isothiocyanate terminated polymers under anhydrous polymerization conditions may also be blocked with nylon forming monomers to form various nylon block copolymers. The isocyanate or isothiocyanate terminated polymers of the polymeric composition when reacted with urea forming monomers produce urea block copolymers. Reaction of the isocyanate or isothiocyanate terminated polymers with urethane forming monomers will produce urethane block copolymers. The isocyanate and isothiocyanate terminated polymers of the polymeric composition when reacted with imide forming monomers produce imide block copolymers.

3,838,109

## HEAT AND FLAME RESISTANT POLYURETHANES

Michel A. Buisson and Gerard P. Repiquet, Martigues, France, assignors to Naphtachimie Societe Anonyme, Paris, France

No Drawing. Filed Oct. 16, 1972, Ser. No. 297,784

Claims priority, application France, Oct. 19, 1971, 7137415

Int. Cl. C08g 22/16, 3/00

U.S. Cl. 260—77.5 AQ 6 Claims

Heat resistant and flame resistant polyurethanes prepared by reacting organo polyisocyanates and polyhydroxyl compounds, the latter of which are produced by reaction of aliphatic ketone, formaldehyde and alkanol amine having a secondary or a primary amine function, and oxyalkylene polyhydroxyl compounds produced by condensation of alkylene oxides before reaction with the organo polyisocyanate.

3,838,110

## INHERENTLY MOLD-RELEASABLE MOLD OR CASTING COMPOSITION

Jose L. Villa, Heightstown, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed May 3, 1973, Ser. No. 356,976

Int. Cl. C08g 22/00

U.S. Cl. 260—77.5 CR 13 Claims

An inherently mold-releasable composition which may be used as either the casting composition or, in its cured state, the mold or as a mold liner is disclosed. No additional mold release agent is necessary when using the composition herein which is prepared from (a) hydroxyl or carboxyl-terminated polymers containing pendant 3-

perfluoroalkyl - 2 - iodopropyl or 2-perfluoroalkyl-1-iodoethyl groups, and (b) polyisocyanates or polyepoxides.

3,838,111

## AMORPHOUS COPOLYAMIDE FROM BIS-(4-AMINOCYCLOHEXYL)METHANE, PHENYLINDANEDICARBOXYLIC ACID AND ALKANE DICARBOXYLIC ACID

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,598

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R 8 Claims

Substantially amorphous, optically clear polyamides are produced from a bis(4-aminocyclohexyl)methane or methyl derivative thereof and a phenylindanedicarboxylic acid or alkyl derivative thereof. Copolyamides having desirable processing properties are produced by polymerizing the above monomers and at least one straight chain dicarboxylic acid as an additional monomer. The resulting polymers are useful as fibers as well as molding resins.

3,838,112

## POLYAMIDES CONTAINING N-LOWER ALKYL 1,2,3-TRIAZOLE-4,5-DICARBONYL GROUPS

Allan Cairncross, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,506

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R 5 Claims

Polyamides made by reacting 1-, and 2-lower alkyl-1,2,3-triazole-4,5-dicarbonyl halides with diamines which are useful for making fibers and films.

3,838,113

## MALEIC ANHYDRIDE COPOLYMER

Robert Victor Smallman, Blackley, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 9, 1972, Ser. No. 261,393

Claims priority, application Great Britain, June 28, 1971, 30,263/71

Int. Cl. C08f *15/36*

U.S. Cl. 260—78.5 R 8 Claims

1:1 Alternating copolymers of maleic anhydride and tetrahydrophthalic anhydride or a homologue thereof and a process for the manufacture of these copolymers. The products are soluble in water with hydrolysis and are useful as emulsifying agents, sizes, water-softening agents, metal ion chelating agents and in detergent compositions as soil-suspending or anti-redeposition agents and as builders.

3,838,114

## IMIDE ADDITIVES FOR SULFUR VULCANIZABLE POLYMERS

John P. Lawrence, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 26, 1972, Ser. No. 266,008

Int. Cl. C08f *27/06;* C08c *11/60;* C08d *9/00*

U.S. Cl. 260—79.5 A 8 Claims

Imides such as N-(morpholinothio)phthalimide are used to affect the vulcanization characteristics of sulfur vulcanizable polymers by increasing the state of vulcanization and/or improving scorch resistance and/or increasing the rate of vulcanization.

3,838,115

## SILYL-NORBORNENE AND INTERPOLYMERS PREPARED OF SAME

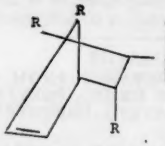
William C. Bond, Jr., Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation

No Drawing. Continuation of abandoned application Ser. No. 112,069, Feb. 2, 1971. This application Jan. 29, 1973, Ser. No. 327,704

Int. Cl. C08f *17/00*

U.S. Cl. 260—80.71 9 Claims

An interpolymer formed by the addition polymerization of ethylene, at least one monoolefin having the general formula $CH_2$=CH—R, with or without a polyene and a silyl norbornene having the general formula




in which R is hydrogen, halogenated or unhalogenated alkyl, arylalkyl, alkenyl or 6- or 7-alkylidene group, R′ is an alkyl, aryl or alkenyl group, X is hydrogen and Y is halogen, and *n* and *m* is a number of from 0 to 2 such that the sum of *m* and *n* is never more than 2.

3,838,116

## PROCESS FOR PREPARING 1,4-BENZODIAZEPINES

James Valentine Earley, Cedar Grove, Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,840

Int. Cl. C07d *53/04*

U.S. Cl. 260—239 BD 4 Claims

A process for preparing 1-substituted-1,4-benzodiazepines via the reduction of the corresponding 2-lower alkylthio benzodiazepines is disclosed. The products obtainable by this process are known compounds and are useful as sedatives, anticonvulsants and muscle relaxants.

3,838,117

## 1,4,5-BENZOTRIAZOCINE DERIVATIVES

Minoru Shindo, Tokyo, Morio Kakimoto, Yono, and Hiroyuki Nagano, Ageo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,824

Claims priority, application Japan, Apr. 8, 1971, 46/21,421, 46/21,422, 46/21,423, 46/21,428

Int. Cl. C07d *55/54*

U.S. Cl. 260—239.3 B 4 Claims

1,4,5-benzotriazocine derivatives which possess an activity on the central nervous system are disclosed. The benzotriazocine derivatives are prepared by the reaction of a benzophenone derivative with a halogenoacetyl halide or the cyclization of a benzophenone derivative.

3,838,118

## [(THIOXANTHENYL)PROPYL]-PIPERIDYL-BENZIMIDAZOLINONES

Willem Soudijn, Turnhout, Ineke van Wijngaarden, Beerse, and Paul Adriaan Jan Janssen, Vosselaar, Belgium, assignors to Janssen Pharmaceutica N.V.

No Drawing. Filed Feb. 20, 1973, Ser. No. 333,859

Int. Cl. C07d *29/28*

U.S. Cl. 260—240 TC 3 Claims

The compounds, 1-{1-[3-(9-thioxanthenyl)propyl]-4-piperidyl}-2-benzimidazolinone and 1-{1-[3-(9-thioxanthenylidene)propyl] - 4 - piperidyl}-2-benzimidazolinone, useful as neuroleptic agents.

3,838,119

## 10a-PHENYL - 7a,10a - DIHYDROFURANO[2',3':4,5] THIAZOLO[2,3-c][1,2,4]BENZOTHIADIAZIN-9(8H)-ONE-5,5-DIOXIDE AND DERIVATIVES THEREOF

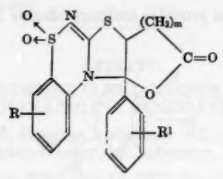
Peter H. L. Wei, Springfield, and Stanley C. Bel, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 30, 1973, Ser. No. 346,494

Int. Cl. C07d *93/32*

U.S. Cl. 260—243 R 2 Claims

Compounds of the formula:



wherein R and $R^1$ are, independently, hydrogen, lower alkyl, halogen, nitro, trifluoromethyl, or lower alkoxy; and *m* is 1 or 2; have CNS depressant activity.

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3,838,120

## 1-ALKYL - 1H,4H - PYRIDO[2,3-d][1,3]OXAZINE-2,4-DIONES AND THEIR CONVERSION TO 1-ALKYL-1,4-DIHYDRO-4-OXO - 1,8 - NAPHTHYRIDINE-3-CARBOXYLIC ACIDS

Andrew W. Zalay, Albany, and Malcolm R. Bell, East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 312,825, Dec. 7, 1972. This application Mar. 29, 1973, Ser. No. 346,191

Int. Cl. C07d *31/36, 87/20*

U.S. Cl. 260—244 R 9 Claims

1-$R_1$-7-Q - 1H,4H - pyrido[2,3-d][1,3]oxazine - 2,4-dione (I) where $R_1$ is lower-alkyl and Q is lower-alkyl, lower-alkanoyloxymethyl, 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents; the preparation of I by heating 2-$R_1$NH-6-Q''-nicotinic acid (V) with a lower-alkyl chloroformate or phosgene to prepare I where Q is Q'', which is like Q but excluding lower-alkanoyloxymethyl, or by converting I where Q is $CH_3$ to its 8-oxide and reacting the oxide with a lower-alkanoic acid anhydride to produce I where Q is lower-alkanoyloxymethyl; the conversion of I to lower-alkyl 1-$R_1$-2-$R_2$ - 1,4 - dihydro - 4 - oxo-7-Q-1,8-naphthyridine-3-carboxylate (III) by reacting I with

$$R_2—C(=O)CH_2COOR,$$

where $R_2$ is H or $CH_3$ and R is lower-alkyl; and, the hydrolysis of III to produce 1-$R_1$-2-$R_2$-1,4-dihydro-4-oxo-7-Q' - 1,8 - naphthyridine - 3 - carboxylic acid (IV), where Q' is like Q but having hydroxymethyl instead of lower-alkanoyloxymethyl. Also shown are: the hydrolysis of 1,2-dihydro-2-oxo-6-Q'''-nicotinonitrile (VII), where Q''' is 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents, to produce 1,2-dihydro-2-oxo-6-Q'''-nicotinic acid (VIII); the halogenation of VIII to produce 2-halo-6-Q'''-nicotinic acid (VI'); and, the reaction of VI' with $R_1NH_2$ to produce 2-$R_1$NH-6-Q'''-nicotinic acid.

3,838,121

## 2-(AMINOALKYL-AMINO)-4-AMINO THIENO [3,2-d]PYRIMIDINES

Eberhard Woitun, Berthold Narr, and Wolfgang Schroter, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

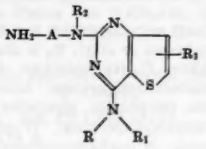
No Drawing. Filed Aug. 4, 1970, Ser. No. 60,933

Claims priority, application Germany, Aug. 8, 1969, P 19 40 572.2; July 2, 1970, P 20 32 686.7, P 20 32 687.8

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 10 Claims

2-(aminoalkylamino)-thieno [3,2-d]pyrimidines of the formula



I

wherein R and $R_1$ may be the same or different and are selected from the group consisting of hydrogen and straight and branched alkyl of 1 to 6 carbon atoms and taken together with the nitrogen atom to which they are attached form a saturated 5 to 7 member heterocyclic ring which can optionally contain an oxygen or nitrogen heteroatom and may be substituted with alkyl of 1 to 6 carbon atoms or hydroxyl, $R_2$ is selected from the group consisting of hydrogen and straight and branched alkyl of 1 to 6 carbon atoms, $R_3$ is selected from the group consisting of methyl in the 6- or 7-position and hydrogen and A is a straight or branched alkylene of 2 to 10 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts which possess cardiovascular and sedative activity and inhibit platelet aggregation, and processes for their preparation.

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3,838,122

## 2-HETEROCYCLIC-1,3-BENZODIAZEPINES

John T. Suh, 3709 W. Scenic Drive 111 N., Mequon, Wis. 53092, and Richard A. Schnettler, 6234 W. Donges Lane, Brown Deer, Wis. 53223

No Drawing. Filed June 30, 1972, Ser. No. 268,128

Int. Cl. C07d *51/70, 53/04, 87/38*

U.S. Cl. 260—247.5 B 8 Claims

The 2-heterocyclic-1,3-benzodiazepines and their pharmaceutically acceptable acid addition salts are antihypertensive agents. Compounds disclosed are 2-morpholino-4,5-dihydro-7,8-dimethoxy-3H-1,3-benzodiazepine hydroiodide and 2-N-methylpiperazino - 4,5 - dihydro-3H-1,3-benzodiazepine hydroiodide.

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3,838,123

## DIBENZOCYCLOHEPTADIOXOLAN DERIVATIVES

René Viterbo, Paris, France, and Giovanni Brancaccio and Giulio Cesare Perri, Naples, Italy, assignors to Richardson Merrell S.p.A., Naples, Italy

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,048

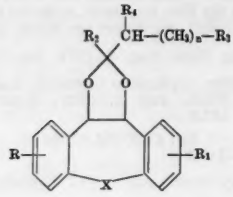
Claims priority, application Italy, Feb. 5, 1971, 48,220/71; Aug. 4, 1971, 52,112/71

Int. Cl. C07d *87/28*

U.S. Cl. 260—247.7 F 10 Claims

New cis- and trans-3a,12b-dihydro-8H-dibenzo[3,4:6,7] cyclohepta[1,2-d]-1,3-dioxolan-8-one and cis- and trans-

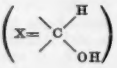
3a,12b-dihydro - 8H - dibenzo[3,4:6,7]cyclohepta[1,2-d]-1,3-dioxolan-8-ol having the following formula (I):



(I)

where X is >C=O or >CHOH; R and $R_1$ are each hydrogen; $R_2$ is hydrogen or alkyl; $R_3$ is dialkylamine, pyrrolidine, piperidine, C-alkylpiperidine, C-dialkylaminopiperidine, C-carbalkoxypiperidine, hexamethylenimine, azabicyclononane, morpholine, piperazine, N'-alkylpiperazine, N'-hydroxyalkylpiperazine, N'-phenylpiperazine, N'-benzylpiperazine, N'-carbalkoxypiperazine; $R_4$ is hydrogen, alkyl or phenyl; and *n* is a whole integer of from 0 to 2.

The ketocompound of formula I (X=>C=O) are prepared by reacting halocompounds with an amine. The hydroxycompounds of formula I



are obtained by reacting the said ketocompound with an alkaline hydride.

The cis- and trans-3a,12b-dihydro-8H-dibenzo[3,4:6,7]cyclohepta[1,2-d]-1,3-dioxolan derivatives described in this invention are useful mainly as anti-inflammatory and anti-spastic agents.

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**3,838,124**

## DERIVATIVES OF ISOCYANURIC ACID AND PROCESSES FOR PREPARING THE SAME

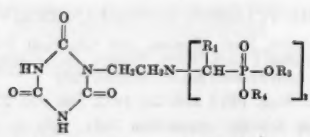
**Edwin A. Matzner, St. Louis, and Robert S. Mitchell, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 105,707, Jan. 11, 1971. This application Mar. 20, 1973, Ser. No. 343,076**

**Int. Cl. C07d *55/38***

**U.S. Cl. 260—248 NS** **10 Claims**

Derivatives of isocyanuric acid of the general formula



wherein $R_1$ is hydrogen or lower organic radical, $R_3$ and $R_4$ are hydrogen, metal, ammonia or organic radicals. The compounds are useful as water treating agents.

**3,838,125**

## 6 - SUBSTITUTED - 5,6,7,8 - TETRAHYDRO-3-HYDRAZINO(SUBSTITUTED HYDRAZINO) PYRIDO(4,3-c)PYRIDAZINES

**Erhard Schenker, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland**

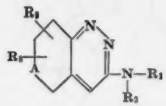
**No Drawing. Filed May 8, 1972, Ser. No. 251,035**

**Claims priority, application Switzerland, May 11, 1971, 6,951/71, 6,952/71; May 26, 1971, 7,679/71, 7,683/71; May 28, 1971, 7,848/71, 7,849/71; Oct. 15, 1971, 15,120/71, 15,121/71**

**Int. Cl. C07d *51/04***

**U.S. Cl. 260—250 A** **63 Claims**

This invention provides aminopyridazine derivatives of formula I,



I

wherein

$R_1$ is amino, or an

group, wherein each of

$R_3$ and $R_4$ is alkyl of 1 to 4 carbon atoms, or

$R_3$ and $R_4$ together with the carbon atom to which they are bound, form a cycloalkylidene radical of 5 to 12 carbon atoms,

$R_2$ is hydrogen or methyl,

A is a $-(CH_2)_n-$ group, wherein

*n* is 0 or an integer from 1 to 7, or an >N—CO—$R_5$ group, wherein

$R_5$ is alkyl or alkenyl of 1 to 16 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, 1-adamantyl, or a $-(CH_2)_m-R_6$ group, wherein

*m* is 0 or an integer from 1 to 4, and

$R_6$ is phenyl; phenyl monosubstituted by fluorine, chlorine, bromine, alkyl or alkoxy of 1 to 4 carbon atoms, alkylmercapto of 1 to 4 carbon atoms, or phenyl; phenyl substituted by two or three substituents of the group chlorine, alkyl or alkoxy of 1 to 4 carbon atoms; diphenylmethyl, the phenyl rings of which may be monosubstituted by fluorine, chlorine, bromine, alkyl or alkoxy of 1 to 4 carbon atoms; or naphthyl,

or an $-OR_7$ group, wherein

$R_7$ is alkyl or alkenyl of 1 to 4 carbon atoms, or phenyl, phenylalkyl or phenylalkenyl which may be monosubstituted on the phenyl ring by chlorine, alkyl or alkoxy of 1 to 4 carbon atoms, and in which the alkylene or alkenylene chain is of 1 to 4 carbon atoms,

and $R_8$ and $R_9$ are each hydrogen or alkyl of 1 to 4 carbon atoms,

and acid addition salts thereof,

The invention also provides processes for the production of said compounds.

Said compounds and pharmaceutically acceptable acid addition salts thereof are useful as antihypertensive agents.

3,838,126

## BRONCHODILATING TETRAZOLO(1,5-c) QUINAZOLIN-5(6H)-ONES

Eugene R. Wagner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 13, 1972, Ser. No. 297,466

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.4 F 9 Claims

Tetrazoloquinazolinone compounds such as 8,9 - dichloro-tetrazolo(1,5 - c)quinazolin-5(6H)-one are prepared by the reaction of a 2-amino phenyltetrazole amine salt with phosgene. The compounds are useful as bronchodilator agents.

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3,838,127

## 4-[4-(HYDROXYALKYL)-1-PIPERAZINO]-QUINAZOLINE BENZOATES

William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Oct. 19, 1972, Ser. No. 299,073

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q 7 Claims

Disclosed are 4-[4-(hydroxyalkyl) - 1 - piperazino]-quinazoline benzoates, e.g., 4-[4-(2-hydroxyethyl)-1-piperazino]-2-methyl-6,7-dimethoxy-quinazoline 3',4',5'-trimethoxybenzoate. The compounds have pharmacological activities in animals and are useful, for example, as anti-anginal agents and/or as agents in the treatment of shock.

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3,838,128

## PROCESS FOR THE PREPARATION OF CERTAIN N-3 - SUBSTITUTED - 6-(TRICHLOROMETHYL) URACILS

Albert William Lutz, Montgomery Township, N.J., and Susan Hensen Trotto, Yardley, Pa., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,187

Int. Cl. C07d *51/30*

U.S. Cl. 260—260 4 Claims

This invention relates to novel 3-substituted-6-(trichloromethyl)uracils and a process for the preparation thereof. The compounds find utility as herbicides.

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3,838,129

## FUNGICIDAL PIPERAZINE DERIVATIVES

Max Pianka, St. Albans, England, assignor to Murphy Chemical Limited, St. Albans, Hertfordshire, England

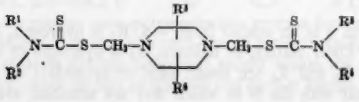
No Drawing. Filed Apr. 24, 1972, Ser. No. 246,665

Claims priority, application Great Britain, Apr. 28, 1971, 11,947/71

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R 4 Claims

Fungicidal compounds for the control of plant pathogenic fungi or for biocidal use have the formula:



wherein $R^1$, $R^2$, $R^3$ and $R^4$ are each independently selected from lower alkyl groups and $R^5$ and $R^6$ are independently selected from hydrogen atoms and lower alkyl groups.

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3,838,130

## $N^{10}$-OXIDES OF 1-NITRO-9-(DIALKYLAMINO-ALKYLAMINO)ACRIDINE

Andrzej Ledochowski, Gdansk, and Barbara Stefanska, Gdansk-Oliwa, Poland, assignors to Starogardzkie Zaklady Farmaceutyczne "Polfa," Starogard Gdanski, Poland

No Drawing. Original application Sept. 2, 1969, Ser. No. 854,608, now Patent No. 3,694,448, dated Sept. 26, 1972. Divided and this application Nov. 24, 1971, Ser. No. 201,946

Claims priority, application Poland, Aug. 31, 1968, P 128,855

Int. Cl. C07d *37/24*

U.S. Cl. 260—279 A 2 Claims

The N-oxides of 1-nitro-9-(dialkylaminoalkylamino)-acridine which are antitumor agents are produced by oxidizing the corresponding $N^{10}$ or $N^{9}$ oxides.

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3,838,131

## DI(DIALKYLAMINO ALKOXY) PHENANTHRIDINES AS ANTIVIRAL AGENTS

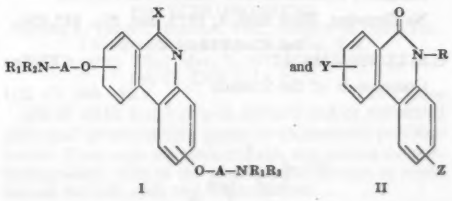
George J. Gauthier, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,830

Int. Cl. C07d *39/02*

U.S. Cl. 260—286 A 6 Claims

Phenanthridines and phenanthridinones of the formulae



and the pharmaceutically-acceptable acid addition salts thereof wherein X is chloro, bromo, hydroxy, alkoxy having from 1 to 6 carbon atoms, amino, monoalkylamino, dialkylamino wherein each of the alkyl groups has from 1 to 6 carbon atoms, and benzylamino; R is hydrogen, alkyl having from 1 to 6 carbon atoms, —A—$NR_1R_2$ wherein each of $R_1$ and $R_2$ is alkyl having from 1 to 6 carbon atoms and A is a divalent alkylene radical having from 2 to 6 carbon atoms; and each of Y and Z is hydrogen, and ω-dialkylaminoalkoxy wherein the alkyl and alkoxy groups have from 1 to 6 carbon atoms and from 2 to 6 carbon atoms, respectively; with the proviso that when R is hydrogen or alkyl, each of Y and Z is dialkylaminoalkoxy; useful as antiviral agents and/or interferon inducers and methods for their preparation.

3,838,132

## 1,4,7,10 - TETRAHYDRO - 1,7-DIOXOQUINO(8,7-h) QUINOLINE-3,9-DICARBOXYLATE COMPOUNDS

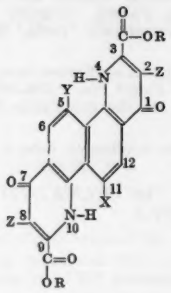
Charles M. Hall, 3835 Ruthin Road, Kalamazoo, Mich. 49002

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,425

Int. Cl. C07d 33/48

U.S. Cl. 260—286 R 7 Claims

Compounds of the formula



are useful in the prophylactic treatment of sensitized humans and animals for allergy and all anaphylactic reactions of a reagin or non-reagin mediated nature.

Compositions of these compounds formulated with pharmaceutical carriers and methods of using these compositions are also provided.

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3,838,133

## 1,4,5,8,9,12-HEXAHYDRO - 4,8,12 - TRIOXOPYRIDO (2,3-f) (1,7) PHENANTHROLINE - 2,6,10-TRICARBOXYLATE COMPOUNDS

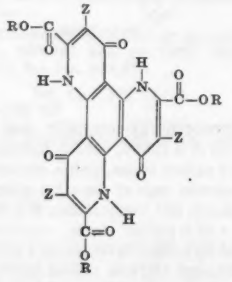
Charles M. Hall and Herbert G. Johnson, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,426

Int. Cl. C07d 33/48

U.S. Cl. 260—286 R 6 Claims

Compounds of the formula



Ia

are useful in the propylactic treatment of sensitized humans and animals for allergy and all anaphylactic reactions of a reagin or non-reagin mediated nature.

Compositions of these compounds formulated with pharmaceutical carriers and methods of using these compositions are also provided.

3,838,134

## PHENANTHRIDINONES AS ANTIVIRAL AGENTS

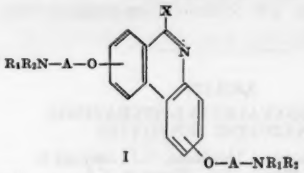
George J. Gauthier, Mystic, Conn. (235 E. 42nd St., New York, N.Y. 10017)

No Drawing. Original application Apr. 3, 1972, Ser. No. 240,830. Divided and this application Jan. 7, 1974, Ser. No. 431,255

Int. Cl. C07d 39/02

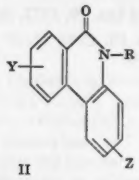
U.S. Cl. 260—286 A 8 Claims

Phenanthridines and phenanthridinones of the formulae



I

and



II

and the pharmaceutically-acceptable acid addition salts thereof wherein X is chloro, bromo, hydroxy, alkoxy having from 1 to 6 carbon atoms, amino, monoalkylamino, dialkylamino wherein each of the alkyl groups has from 1 to 6 carbon atoms, and benzylamino; R is hydrogen, alkyl having from 1 to 6 carbon atoms, —A—$NR_1R_2$ wherein each of $R_1$ and $R_2$ is alkyl having from 1 to 6 carbon atoms and A is a divalent alkylene radical having from 2 to 6 carbon atoms; and each of Y and Z is hydrogen, and ω-dialkylaminoalkoxy wherein the alkyl and alkoxy groups have from 1 to 6 carbon atoms and from 2 to 6 carbon atoms, respectively; with the proviso that when R is hydrogen or alkyl, each of Y and Z is dialkylaminoalkoxy; useful as antiviral agents and/or interferon inducers and methods for their preparation.

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3,838,135

## OXIMO TETRACYCLIC INDOLES

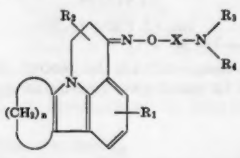
Ernest Magnien, Flushing, and Juta Cabilio, Bronx, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

No Drawing. Filed Oct. 18, 1972, Ser. No. 298,658

Int. Cl. C07d 33/50

U.S. Cl. 260—288 R 10 Claims

Compounds of the structure



wherein *n* is an integer from 4–6, $R_1$ is hydrogen, lower alkyl, lower alkoxy, or halogen, $R_2$ is hydrogen or lower alkyl, $R_3$ and $R_4$ are lower alkyl or cycloalkyl or taken together with the N to which they are attached, are pyr-

rolidino, piperidino, morpholino, or piperazino, have hypotensive activtiy.

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3,838,136

## PREPARATION OF 2-CHLORO-3-AMINOPYRIDINE

Artur Blank, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Jan. 16, 1973, Ser. No. 324,020

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R 4 Claims

The present process is concerned with a simple and practical method for the preparation of 2-chloro-3-aminopyridine from 3-aminopyridine. The new method essentially consists in chlorinating the latter with gaseous chlorine at low temperatures in the presence of a catalyst.

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3,838,137

## BRANCHED ETHYLENE/DIENE COPOLYMER

Walter K. Tang, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 16, 1968, Ser. No. 705,888

Int. Cl. C08f *1/56, 15/40*

U.S. Cl. 260—80.78 10 Claims

An ethylene/diene copolymer having a Branching Factor of at least 1.1 is prepared by copolymerizing ethylene in a hydrocarbon solvent with a non-conjugated diene having a polymerization reactivity substantially lower than that of ethylene, in the presence of a regenerative coordination catalyst system comprising essentially a vanadium compound, an organoaluminum compound and a halogen-containing oxidant, at a 25–80% conversion of diene and a catalyst efficiency of at least twice that of the same polymerization mixture without an oxidant.

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3,838,138

## SHORT CYCLE, THERMALLY STABLE VINYL CHLORIDE-PROPYLENE COPOLYMERS

Michael Langsam, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed Nov. 16, 1972, Ser. No. 307,018

Int. Cl. C08f *1/60, 15/02*

U.S. Cl. 260—87.5 C 4 Claims

Rigid vinyl chloride-propylene copolymers are prepared over shorter cycle periods by conducting the polymerization process in the presence of a t-butyl perneoalkanoate free-radical catalyst. The novel copolymers, possessing improved thermal stability, contain from about 90 to 99% by weight vinyl chloride, 1 to 10% by weight propylene, and are further characterized by an intrinsic viscosity of 0.5 to 1.5 dl./g. and a melt flow rate of at least 0.1 dg./min., providing resinous compositions which are particularly adaptable to molding and extrusion operations.

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3,838,139

## CONTINUOUS MASS STYRENE-TYPE MONOMER POLYMERIZATION PROCESS

George A. Latinen, deceased, by May V. Latinen, administratrix, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

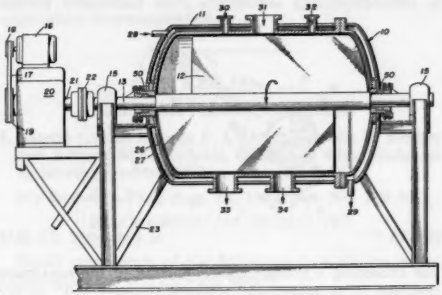
Filed Aug. 16, 1971, Ser. No. 172,148

The portion of the term of the patent subsequent to Aug. 7, 1990, has been disclaimed

Int. Cl. C08f *1/04, 7/04*

U.S. Cl. 260—88.2 C 4 Claims

A continuous mass polymerization process for making polyalkenyl aromatic polymers having a substantially uniform number average molecular weight within the range of from about 20,000 to 100,000 and further having a dispersion index of from about 2.0 to 3.5. Such polymers reduce cycle times in injection molding machines. The process involves a specialized mixing technique during polymerization of monomer to polymer.



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3,838,140

## MOLECULAR WEIGHT REGULATION IN CHLOROPRENE POLYMERS

Rudolf Mayer-Mader, Cologne, and Jurgen Boldt, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 9, 1972, Ser. No. 305,134

Claims priority, application Germany, Nov. 13, 1971, P 21 56 452.3

Int. Cl. C08d *3/14*; C08f *1/80, 3/32*

U.S. Cl. 260—92.3 4 Claims

A process for polymerising a monomer composition of chloroprene and 0 to 50% by weight of one or more other copolymerisable monomers in aqueous emulsion on radical forming catalysts in the presence of a selected dialkoxyxanthate disulphide and a mixture of the polymer thus obtained with a benzene insoluble cross-linked chloroprene polymer.

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3,838,141

## BIODEGRADABLE EMULSIFIERS FOR POLYCHLOROPRENE

Nathan L. Turner, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,533

Int. Cl. C08f *1/13, 3/32*

U.S. Cl. 260—92.3 10 Claims

Use of alkali metal salts of sulfated and/or sulfonated oleic acid as emulsifying agents in chloroprene polymerization. These salts are biodegradable and replace the non-biodegradable salts of the condensation product of naphthalene sulfonic acids and formaldehyde.

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3,838,142

## PROCEDURE FOR CORRECTING RADIAL FORCE VARIATIONS IN PNEUMATIC TIRES

Peter A. Hochstein, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

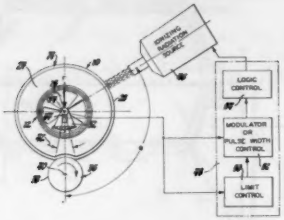
Filed Apr. 23, 1973, Ser. No. 353,234

Int. Cl. B29c *15/00, 17/07, 23/00*; B29h *5/02, 17/02*

U.S. Cl. 264—94 5 Claims

A procedure for correcting radial force variations in pneumatic tires of the type having a body portion of polymeric material defining a pair of circular sidewalls interconnected by a tread body, the procedure including the steps of rotating the inflated pneumatic tire while subjecting the latter to a normal operating load, continuously monitoring the magnitude of the reaction force resisting the applied load to determine the magnitude and location of the maximum reaction force, and subjecting selected sections of the tire sidewalls and/or tread body to ionizing

radiation to increase the modulus of elasticity of the irradiated sections. The sections to be irradiated are those corresponding to instantaneous reaction force magnitudes




not exceeding a predetermined portion of the maximum reaction force magnitude achieved through 360° of tire rotation.

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**3,838,143**

**PROCESSES FOR THE RECOVERY OF PROTEIN FROM WASTE EFFLUENTS USING REGENERATED CELLULOSE ION-EXCHANGE RESINS**

**Roy Arthur Grant, Poole, England, assignor to Tasman Vaccine Laboratories Limited, Upper Hutt, New Zealand**

**Continuation-in-part of abandoned application Ser. No. 161,110, July 9, 1971, which is a division of application Ser. No. 841,430, July 14, 1969, now Patent No. 3,697,419. This application July 3, 1972, Ser. No. 268,282**

**Claims priority, application New Zealand, July 15, 1968, 153,129**

**The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed**

**Int. Cl. A23g** *1/16;* **C08h** *1/00*

**U.S. Cl. 260—112 R** **2 Claims**

A process is disclosed for recovering protein from waste effluents containing same using ion exchange methods. The preferred ion exchange resin is a cross linked regenerated cellulose matrix modified by the introduction of groups capable of cation exchange or groups capable of anion exchange.

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**3,838,144**

**PURIFICATION OF AUSTRALIA ANTIGEN BY ULTRACENTRIFUGATION**

**John Michael Leach, Deal, England, assignor to Pfizer Inc., New York, N.Y.**

**No Drawing. Filed Aug. 21, 1972, Ser. No. 282,046**

**Claims priority, application Great Britain, Sept. 9, 1971, 42,017/71**

**Int. Cl. A61k** *23/02, 27/00*

**U.S. Cl. 260—112 R** **5 Claims**

Australia antigen (hepatitis-associated antigen) for use in the production of antisera in animals is purified from samples of human plasma containing the antigen by isopycnic banding in a zonal centrifuge followed by rate zonal centrifugation.

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**3,838,145**

**DISAZO COMPOUNDS OF LOW WATER SOLUBILITY**

**Ruedi Altermatt, Hauptstrasse 35, Tecknau, Basel-Land, Switzerland**

**No Drawing. Filed July 2, 1969, Ser. No. 838,665**

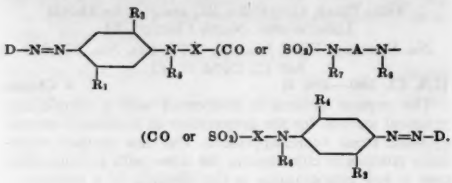
**Claims priority, application Switzerland, July 16, 1968, 10,630/68**

**Int. Cl. C09b** *33/06;* **D06p** *3/52, 3/60*

**U.S. Cl. 260—184** **14 Claims**

This invention relates to disazo compounds of low water solubility which are excellent for dyeing and printing fibres and textiles consisting of synthetic or semi-synthetic, high molecular-weight organic substances of hydrophobic character. Such fibres include those of linear aromatic polyesters, cellulose diacetate, cellulose triacetate and polyamide. Resulting dyeings are fast, e.g., to thermofixation, sublimation, pleating, gas fumes, cross-dyeing, dry cleaning, chlorine and wet tests.

The dyes are of the general type of



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**3,838,146**

**CARDENOLIDE- AND BUFADIENOLIDE-3-[2',3'-DIDESOXYGLYCOSIDES] AND PROCESS FOR THEIR PREPARATION**

**Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, Kurt Radscheit, Kelkheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany**

**No Drawing. Filed Aug. 10, 1970, Ser. No. 62,712**

**Claims priority, application Germany, Aug. 29, 1969, P 19 43 901.1, P 19 43 903.3**

**Int. Cl. C07c** *173/00*

**U.S. Cl. 260—210.5** **9 Claims**

Cardenolide- and bufadienolide - 3 - [2',3' - didesoxyglycosides] and corresponding compounds having an oxido group in the 2',3'-position of the glycoside, and a process for making them starting from the corresponding 2',3'-unsaturated compounds by reaction with organic percarboxylic acids or by catalytic hydrogenation. The compounds are useful for the treatment of cardiac insufficiency.

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**3,838,147**

**ADENOSINE DERIVATIVES**

**Rolf Pohlke, Rochus Jonas, Werner Mehrhof, Hans-Jochen Schliep, Karl Heinz Becker, Herbert Nowak, and Zdenek Simane, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany**

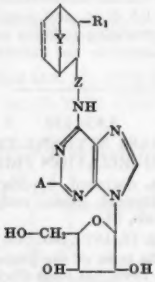
**No Drawing. Filed Apr. 10, 1972, Ser. No. 242,741**

**Claims priority, application Germany, Apr. 10, 1971, P 21 17 577.9; Feb. 3, 1972, P 22 05 002.8**

**Int. Cl. C07d** *51/54*

**U.S. Cl. 260—211.5 R** **44 Claims**

Compounds of the formula



wherein A is H, halogen, $SR_2$, $OR_2$, $N(R_2)_2$, NH—$N(R_2)_2$ or $N_3$; $R_1$ is $CH_2OH$, alkyl or cycloalkyl of up to 6 carbon atoms, $COOR_2$, furyl, tetrahydrofuryl, thienyl, a 5- or 6-membered saturated or unsaturated ring containing one or two nitrogen atoms, or unsubstituted phenyl or phenyl mono-, di- or polysubstituted by

one or more of $R_2$, halogen, $OR_2$, $N(R_2)_2$, OAc, NHAc or nitro or monosubstituted by alkylenedioxy; $R_2$ is H or alkyl of up to 4 carbon atoms; Y is $(—CH_2)—_m$ wherein *m* is the integer 1, 2 or 3, Ac is the acyl radical of a carboxylic acid of up to 6 carbon atoms, and Z is $(—CH_2—)_n$ wherein *n* is the integer 0, 1 or 2; and the dotted line means a double bond can be present at that position of the molecule, and the therapeutically acceptable salts thereof possess valuable pharmacological properties. More specifically, they have a favourable influence on the transport of oxygen in the blood, i.e. they possess one or more activities selected from increasing the coronary blood flow, increasing the oxygen partial pressure in the coronary venous blood, and improving the circulation. Additionally, they are effective on the lipid metabolism, i.e. they possess one or more activities selected from inhibiting the lipolysis, lowering the level of fatty acids, the level of triglycerides and the level of cholesterol.

Accordingly, the compounds can be employed as pharmaceuticals. For example, they are effective in the endovascular pain model and thus may be used against the pain associated with angina pectoris. They may also be employed in the treatment of arteriosclerosis and hyperlipidemia of different origins. They are also useful as intermediates for the preparation of other drugs and/or other chemical compounds.

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**3,838,148**

## PROCESS FOR THE INDUSTRIAL PREPARATION OF DESOXYRIBONUCLEIC ACIDS OF HIGH MOLECULAR WEIGHT

**Karl Christen, Niederurnen, Switzerland, assignor to Rephamac A.G., Niederurnen, Switzerland**

**No Drawing. Filed Apr. 11, 1972, Ser. No. 243,070**
**Claims priority, application Switzerland, Apr. 16, 1971, 5,598/71**
**Int. Cl. C07d** *51/50*
**U.S. Cl. 260—211.5 R** **9 Claims**

A process for preparing highly polymerized desoxyribonucleic acids from fish milt and the like from which lipides have been removed and which has been treated with an alkali salt including the steps of treating with a solution of phenol in such quantity as to saturate the mass containing the nucleo-protein material to liberate DNA therefrom.

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**3,838,149**

## STARCH PHOSPHATE ESTERS

**Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.**

**No Drawing. Filed Mar. 28, 1973, Ser. No. 345,661**
**Int. Cl. C08b** *19/04*
**U.S. Cl. 260—233.5** **10 Claims**

A method for the preparation of starch phosphate esters is described wherein aqueous slurries or dispersions of a starch base are reacted with an N-phosphoryl-N′-alkyl or N-phosphoryl-N′-alkenyl or N-phosphoryl-N′-aralkyl substituted imidazole salt. The starch products may also be prepared by means of a dry procedure.

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**3,838,150**

## DISACCHARIDE POLYSULFATE ESTER HYDROXYALUMINUM ALLANTOINATE-ALUMINUM COMPLEX AND PROCESS FOR PREPARING SAME

**Mamoru Sugiura, Konan, and Tadashi Kitamikado and Kazuo Kato, Nagoya, Japan, assignors to Maruko Seiyaku Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan**

**Filed June 23, 1972, Ser. No. 265,519**
**Claims priority, application Japan, July 6, 1971, 46/49,270**
**Int. Cl. C07c** *69/32*
**U.S. Cl. 260—234 R** **4 Claims**

Novel antiulcer agents, comprising a disaccharide polysulfate ester hydroxyaluminium allantoinate-aluminium complex is produced by the steps of: reacting an alkaline salt of a disaccharide polysulfate ester with chlorhydroxy aluminium allantoinate and thereafter reacting the resulting compound with aluminium hydroxychloride or aluminium dihydroxychloride.

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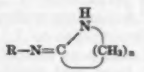
**3,838,151**

## CYCLOALKYLLACTAMIMIDES

**J. Martin Grisar, George P. Claxton, Thomas R. Blohm, and Edward McC. Roberts, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.**

**No Drawing. Filed Aug. 11, 1972, Ser. No. 280,049**
**Int. Cl. C07d** *27/04, 29/28, 41/02*
**U.S. Cl. 260—239 B** **7 Claims**

Novel compounds of the following formula are useful as hypoglycemic and antiviral agents



wherein R represents norbornyl or adamantanyl and *n* is an integer of from 3 to 11.

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**3,838,152**

## POLY α-AMINO PENICILLINS

**Joseph P. Hou, Fort Worth, Tex., and John W. Poole, Norristown, Pa., assignors to American Home Products Corporation, New York, N.Y.**

**No Drawing. Filed Oct. 7, 1971, Ser. No. 187,501**
**Int. Cl. C07d** *99/16*
**U.S. Cl. 260—239.1** **7 Claims**

High molecular weight dimers, trimers, tetramers of semi synthetic α-amino pencillins are described as being useful against gram-negative and gram-positive infections. The products described herein are absorbed slowly in the body and hence provide longer lasting anti-microbial effect.

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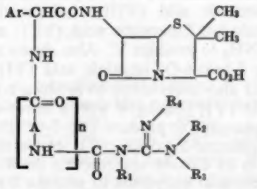
**3,838,153**

## 6-[α-(GUANYLUREIDOALKANOYLAMINO) ARACYLAMINO]PENICILLANIC ACIDS

**Ernest S. Hamanaka, Groton, and David S. Patton, North Stonington, Conn., assignors to Pfizer Inc., New York, N.Y.**

**No Drawing. Filed May 16, 1972, Ser. No. 253,856**
**Int. Cl. C07d** *99/16*
**U.S. Cl. 260—239.1** **11 Claims**

Compounds of the formula



wherein Ar is phenyl, 4-hydroxyphenyl, 2-thienyl or 3-thienyl; A is alkylene of 1 to 4 carbon atoms or alkylidene of 2 to 4 carbon atoms; *n* is an integer of 1 to 3; $R_1$, $R_2$, $R_3$ and $R_4$ considered separately are each hydrogen or alkyl of 1 to 4 carbon atoms, $R_1$ and $R_4$ considered to-

gether are alkylene of 2 to 4 carbon atoms; $R_2$ and $R_4$ considered together are alkylene of 2 to 4 carbon atoms; and $R_2$ and $R_3$ considered together are alkylene of 4 to 5 carbon atoms as broad spectrum antibiotics.

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3,838,154

## 2,6-DIAMINO-3,5-DINITROPYRIDINES AND DERIVATIVES THEREOF

**Arthur H. Gerber, Cleveland, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated**

**No Drawing. Original application Nov. 23, 1970, Ser. No. 92,154, now Patent No. 3,740,410, dated June 19, 1973. Divided and this application Jan. 17, 1973, Ser. No. 324,282**

**Int. Cl. C07d** *31/48*

**U.S. Cl. 260—294.8 F** **4 Claims**

Processes for the preparation of 2,6-diamino-3,5-dinitropyridine from 2,6-diaminopyridine and catalytic reduction of this dinitropyridine to 2,3,5,6-tetraaminopyridine free base and acid salts thereof, and processes for preparing polymers from said pyridines.

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3,838,155

## N-ARYL 5-(OR 6-) METHYLPYRID-2-ONES

**Patrick J. McNulty, Wyndmoor, Horst O. Bayer, Levittown, and Michael C. Seidel, Chalfont, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.**

**No Drawing. Filed Aug. 17, 1972, Ser. No. 281,358**

**Int. Cl. C07d** *31/36*

**U.S. Cl. 260—295.5 R** **10 Claims**

Novel compounds belonging to the class of 1-aryl-3-carboxy-methylpyrid-2-one. These compounds possess biological activity and in particular are plant growth regulators.

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3,838,156

## CERTAIN 2-SUBSTITUTED-6-(3 OR 4-PYRIDYL)-NICOTINIC ACID DERIVATIVES

**R. Pauline Brundage, Schodack, and George Y. Lesher, Rensselaer, N.Y., assignors to Sterling Drug Inc., New York, N.Y.**

**No Drawing. Filed Mar. 29, 1973, Ser. No. 346,190**

**Int. Cl. C07d** *31/36*

**U.S. Cl. 260—295.5 R** **3 Claims**

Intermediate 2-$R_1$NH-6-Q'''-nicotinic acid (V'), where $R_1$ is lower-alkyl and Q''' is 4(or 3)-pyridyl or 4(or 3)-pyridyl having one or two lower-alkyl substituents, is prepared in the three steps of: hydrolyzing 1,2-dihydro-2-oxo-6-Q'''-nicotinonitrile (VII) to produce 1,2-dihydro-2-oxo-6-Q'''-nicotinic acid (VIII); halogenating VIII to produce 2-halo-6-Q'''-nicotinic acid (VI'); and, reacting VI' with $R_1NH_2$ to produce V'. Also shown are the steps of: reacting 2-halo-6-Q''-nicotinic acid (VI), where Q'' is as Q''' and also lower-alkyl, to produce 2-$R_1$NH-6-Q''-nicotinic acid (V); heating V with a lower-alkyl chloroformate or phosgene to produce 1-$R_1$-7-Q''-1H,4H-pyrido-[2,3-d][1,3]oxazine-2,4-dione (I'); converting I' where Q'' is $CH_3$ to its 8-oxide and reacting the 8-oxide with a lower-alkanoic acid anhydride to produce I where 7-$CH_3$ is converted to 7-(lower-alkanoyloxymethyl); reacting 1 - $R_1$ - 7-Q-1H,4H-pyrido[2,3-d][1,3]oxazine-2,4-dione, where Q is as Q'' and also lower-alkanoyloxymethyl, with $R_2$-C(=O)$CH_2$COOR, where $R_2$ is H or $CH_3$ and R is lower-alkyl, to produce lower-alkyl 1-$R_1$-1,4-dihydro-2-$R_2$-4-oxo-7-Q-1,8-naphthyridine-3-carboxylate (III); and, hydrolyzing III to obtain 1-$R_1$-1,4-dihydro-2-$R_2$-4-oxo-7-Q'-1,8-naphthyridine-3-carboxylic acid (IV), where Q' is like Q but having hydroxymethyl in place of lower-alkanoyloxymethyl.

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3,838,157

## PROCESS FOR PRODUCING BIPYRIDYLS

**Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England**

**No Drawing. Original application Mar. 6, 1969, Ser. No. 804,993, now Patent No. 3,651,071, dated Mar. 21, 1972. Divided and this application Aug. 24, 1971, Ser. No. 174,519**

**Claims priority, application Great Britain, Mar. 18, 1968, 13,008/68; May 29, 1968, 25,773/68; Dec. 20, 1968, 60,714/68, 60,715/68, 60,716/68; Jan. 2, 1969, 246/69**

**Int. Cl. C07d** *31/42*

**U.S. Cl. 260—296 D** **11 Claims**

The invention is concerned with a process of producing bipyridyls by oxidizing a substituted pyridine with molecular oxygen in the vapor phase at 250° C. to 450° C.

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3,838,158

## DIALKYLAMINO ETHERS OF BENZOPYRANO-PYRIDINES

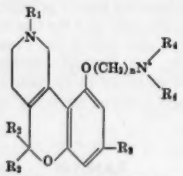
**Harry George Pars, Lexington, and Raj Kumar Razdan, Belmont, Mass., assignors to Sharps Associates, Cambridge, Mass.**

**No Drawing. Filed May 8, 1972, Ser. No. 251,731**

**Int. Cl. C07d** *31/42*

**U.S. Cl. 260—296 H** **6 Claims**

Dialkylamino ethers of benzopyranopyridines represented by the formula



wherein $R_1$ is hydrogen, loweralkyl, loweralkanoyl, cycloalkylloweralkyl, cycloalkylloweralkanoyl, loweralkenyl, loweralkynyl, halololoweralkenyl, phenylloweralkyl, phenylloweralkenyl or phenylloweralkynyl; $R_3$ is loweralkyl; $R_3$ is $C_1$–$C_9$ alkyl or cycloalkylloweralkyl; $n$ is an integer from 1 to 6; and $R_4$ is hydrogen or loweralkyl; and the pharmaceutically acceptable acid addition salts thereof.

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3,838,159

## SUBSTITUTED AMINOHALOPYRIDINES

**Howard Johnston, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.**

**No Drawing. Continuation-in-part of application Ser. No. 90,442, Nov. 13, 1970, which is a continuation-in-part of application Ser. No. 880,422, Nov. 26, 1969, which in turn is a continuation-in-part of application Ser. No. 807,979, Mar. 17, 1969, all now abandoned. This application Dec. 7, 1972, Ser. No. 313,187**

**Int. Cl. C07d** *31/42*

**U.S. Cl. 260—296 R** **10 Claims**

Disclosed as novel compounds are amino and halo substituted pyridines which are further substituted with trichloromethyl or dichloromethyl groups. The compounds have utility as pesticides and find particular usage as fungicides, bactericides, insecticides and plant growth stimulants.

3,838,160

## DYE PENETRANT METHOD AND COMPOSITION

Orlando G. Molina, Westminster, Calif., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation-in-part of application Ser. No. 68,475, Aug. 31, 1970, which is a continuation of application Ser. No. 655,752, July 25, 1967, both now abandoned. This application Jan. 24, 1972, Ser. No. 220,414

Int. Cl. C09k *1/02*; G01n *21/16*

U.S. Cl. 252—301.2 P 4 Claims

A dye penetrant composition adapted to enter minute surface defects when applied over a workpiece surface, which consists essentially of an organic dye, preferably a fluorescent dye, in a lactam solvent, particularly N-methyl-2-pyrrolidone, and providing improved clarity and definition when inspected under suitable, e.g. fluorescent, light.

3,838,161

## PROCESS FOR THE PRODUCTION OF ISOTHIAZOLYL COMPOUNDS

Srinivasachari Rajappa, Bombay, India, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

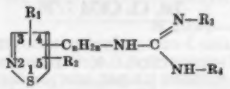
No Drawing. Filed July 11, 1972, Ser. No. 270,754

Claims priority, application Switzerland, July 15, 1971, 10,413/71

Int. Cl. C07d *91/12*

U.S. Cl. 260—302 A 7 Claims

Substituted isothiazolyl-alkyl-guanidines of the formula



(I)

their tautomeric forms and acid addition salts thereof are potent myocardial catecholamine depletors as well as hypotensive and antihypertensive agent.

3,838,162

## 3-LOWER ALKYL-5-[o-(ω-AMINO-ALKOXY)-PHENOXYMETHYL]-ISOXAZOLES AND SALTS THEREOF

Roland Maier and Erich Muller, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

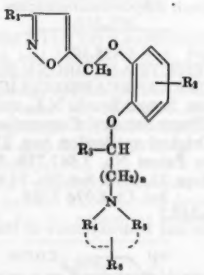
No Drawing. Filed Sept. 10, 1971, Ser. No. 179,522

Claims priority, application Germany, Sept. 11, 1970, P 20 45 050.4; June 16, 1971, P 21 29 803.3

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 H 7 Claims

Compounds of the formula



wherein

$R_1$ is alkyl of 1 to 3 carbon atoms,

$R_2$ is hydrogen, halogen or straight or branched alkyl of 1 to 4 carbon atoms,

$R_3$ is hydrogen or methyl,

$R_4$ and $R_5$, which may be identical to or different from each other, are each hydrogen, straight or branched alkyl of 1 to 6 carbon atoms or, together with each other and the nitrogen atom to which they are attached, morpholino, piperazino, pyrrolidino or piperidino,

$R_6$ is hydrogen or methyl, and

$n$ is an integer from 1 to 3, inclusive,

and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as their salts are useful as hypotensives and sedatives.

3,838,163

## SUBSTITUTED ISOXAZOLE DERIVATIVES AS STEROID INTERMEDIATES

Gabriel Saucy, Essex Fells, and John William Scott, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Nov. 22, 1968, Ser. No. 778,314, now Patent No. 3,700,661, dated Oct. 24, 1972. Divided and this application Oct. 16, 1972, Ser. No. 298,036

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 H 6 Claims

The novel intermediates and processes of this invention provide a new synthetic route for the preparation of pharmaceutically valuable 19-nor-steroids. Further, the intermediates and processes of the invention provide a novel route for the preparation of pharmaceutically valuable estrones. The present invention provides a facile total synthesis of 13β-alkyl-C/D-*trans*-steroidal materials. The desirable result is obtained via a unique asymmetric induction followed by subsequent stereo-specific reaction steps. As a precursor to the steroidal Ring A, a 3,5-disubstituted-4-isoxazolylmethylene group is employed in this synthesis.

3,838,164

## CROSSLINKING MONOMERS CONTAINING THE 1 - AZA - 3,7 - DIOXABICYCLO[3.3.0]OCTANE STRUCTURE

Richard J. Himics, Lake Hiawatha, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 44,534, June 8, 1970, now Patent No. 3,759,942. This application Nov. 15, 1972, Ser. No. 306,541

Int. Cl. C07d *85/26*

U.S. Cl. 260—307 F 4 Claims

Derivatives of 1-aza-5-hydroxymethyl-3,7-dioxabicyclo [3.3.0] octane are radiation-curable and suitable for use in printing inks, coating compositions, adhesives, and the like.

3,838,165

## POLYFLUOROUREAS

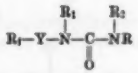
Walter Blochl, Karlsruhe, Germany, assignor to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 830,849, June 5, 1969. This application July 10, 1972, Ser. No. 270,208

Int. Cl. C07d *49/30*

U.S. Cl. 260—309.7 3 Claims

Hydroxymethylated derivatives of polyfluoroalkylureas are useful for imparting oil, water and crease resistance to fibrous substrates. The polyfluoroalkylureas have the formula:



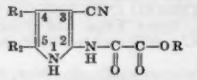
wherein $R_f$ is n-perfluoroalkyl group of 4–16 carbon atoms; Y is an alkylene bridge optionally interrupted with —O—, —S—, —SO—, —$SO_2$—, —$SO_2NR'$—, —CONR'—, —C(O)O—, and —NR'— wherein R' represents hydrogen, lower alkyl and -ureido; $R_1$ and $R_2$ are each hydrogen, lower alkyl or taken together can complete an imidozolidone or pyrimidone ring and R is hydrogen, lower alkyl, or $R_f$—Y—, it being provided that at least one urea nitrogen atom has hydrogen bonded thereto and it being further provided that the number of carbon atoms in Y is 2–12 for the non-interrupted bridge and 2–60 for the interrupted bridge.

## 3,838,166
## LOWER ALKYL(3-CYANO-PYRROL-2-YL) OXAMATES

**Charles De Witt Blanton, Jr., 130 Broomsedge Trail, Athens, Ga. 30601, and Herbert G. Johnson, 3727 Middlebury Drive, Kalamazoo, Mich. 49007**

**No Drawing. Filed Sept. 27, 1972, Ser. No. 292,652**
**Int. Cl. C07d 27/22**
**U.S. Cl. 260—326.2** **4 Claims**

This invention relates to novel compounds of the formula



wherein R is lower alkyl of 1 through 6 carbon atoms, $R_1$ is selected from the group consisting of lower alkyl or 1 through 6 carbon atoms,

wherein X is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, methoxy, and methyl, and $R_2$ is selected from the group consisting of hydrogen and lower alkyl of 1 through 6 carbon atoms. The new products of Formula I are useful as anti-allergenics.

## 3,838,167
## PROCESS FOR PREPARING INDOLES

**Charles D. Jones, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.**

**No Drawing. Filed Aug. 1, 1972, Ser. No. 277,018**
**Int. Cl. C07d 27/56**
**U.S. Cl. 260—326.16** **8 Claims**

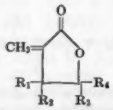
An indole is produced by reacting an N-sulfonylated *o*-aminophenyl carbonyl compound, specifically an N-sulfonylated *o*-aminophenyl ketone or an N-sulfonylated *o*-aminobenzaldehyde, with an α-haloketone or an α-haloester to produce an N,N-disubstituted sulfonamide, ring-closing and dehydrating the resulting N,N-disubstituted sulfonamide to produce an N-sulfonyl indole, and cleaving the N-sulfonyl group from the N-sulfonyl indole to obtain a 1-unsubstituted indole product.

## 3,838,168
## α-METHYLENATION OF γ-BUTYROLACTONES

**William L. Parker, North Brunswick, N.J., and Francis Johnson, Newton Lower Falls, Mass., assignors to The Dow Chemical Company, Midland, Mich.**

**No Drawing. Continuation of abandoned application Ser. No. 878,901, Nov. 21, 1969. This application Sept. 26, 1972, Ser. No. 292,291**
**Int. Cl. C07d 5/06**
**U.S. Cl. 260—326.36** **10 Claims**

A process for making α-methylenated γ-butyrolactones having the formula



wherein $R_1$–$R_4$ are hydrogen or inert, substantially non-interfering organic groups, comprises reacting the corresponding α-carboxy-γ-butyolactone with formaldehyde in an acidic medium, and preferably in the presence of a dialkylamine catalyst. In example, α-carboxy-γ-phenyl-γ-butyrolactone was reacted with formaldehyde in the presence of diethylamine and in a glacial acetic acid/sodium acetate reaction medium to give the corresponding α-methylenated product.

## 3,838,169
## 3-ALKOXY-THIANAPHTHENE-2-CARBOXAMIDES

**Michel Leon Thominet, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France, Paris, France**

**No Drawing. Continuation-in-part of application Ser. No. 140,605, May 5, 1971, now Patent No. 3,745,175, dated July 10, 1973, which is a continuation-in-part of abandoned application Ser. No. 845,509, July 28, 1969. This application Apr. 5, 1973, Ser. No. 348,297**
**Claims priority, application France, July 29, 1968, 161,060; Oct. 28, 1968, 171,684**
**Int. Cl. C07d 63/18**
**U.S. Cl. 260—330.5** **8 Claims**

The 3-alkoxy-thianaphthene-2-carboxamides of this invention are effective for the treatment of mammals afflicted with emesis. When administered to dogs in dosages of 250 μg./kg., compounds of this invention give 100% protection against vomiting normally induced by subcutaneous administration of apomorphine. The compounds of this invention also favorably modify behavior distubances in mammals.

## 3,838,170
## ISOCHROMANONES

**William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.**

**No Drawing. Continuation-in-part of abandoned application Ser. No. 76,294, Sept. 28, 1970. This application Sept. 1, 1972, Ser. No. 285,748**
**Int. Cl. C07d 7/26**
**U.S. Cl. 260—343.2 R** **2 Claims**

Spiro phthalan-3-ones and spiro isochroman-1-ones, e.g. 2' - dimethylaminomethyl-3',4'-dihydrospiro[isochroman-3,1'(2'H)-naphthalene]-1-one, are prepared by cyclizing corresponding N-alkyl benzamides and N-alkyl toluamides. The compounds are useful as diuretic, anti-hypertensive and analgesic agents.

## 3,838,171
## DIHYDROISOCOUMARINS

**Peter Michael Scott and Wilhelmina van Walbeek, Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada**

**Filed Oct. 30, 1972, Ser. No. 301,757**
**Int. Cl. C07d 7/26**
**U.S. Cl. 260—343.2 R** **4 Claims**

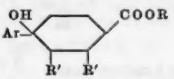
The present invention relates to novel dihydroisocoumarins having antibiotic activity and are inter alia effective in inhibiting the growth of certain micro-organisms particularly certain species of dermatophytes and inhibiting the germination of certain species of fungi. The invention also relates to a microbiological method for the production of such dihydroisocoumarins.

## 3,838,172
## ARYL SUBSTITUTED-HYDROXY SUBSTITUTED CYCLOHEXANECARBOXYLIC ACIDS

**George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation**

**No Drawing. Original application Aug. 22, 1967, Ser. No. 662,295, now Patent No. 3,567,770. Divided and this application Sept. 23, 1970, Ser. No. 74,858**
**Int. Cl. C07d 7/04**
**U.S. Cl. 260—345.7** **4 Claims**

Hydroxyacids and hydroxyesters of the formula:



wherein R is hydrogen or lower alkyl, R' is lower alkyl and Ar is substituted aryl, are intermediates in the preparation of 2-lower alkyl-3-lower alkyl-4-aryl-cyclohexenecarboxylic acids and esters which are active agents for the suppression of animal reproduction.

3,838,173

## 2-NITRO-5 OR 6 OR 7-METHOXY BENZOFURAN

Rene R. Royer, Pierre G. Demerseman, and Loic J. Rene, Paris, and Raymond E. Cavier, Villejuif, Val de Marne, France, assignors to Agence Nationale de Valorisation de la Recherche, Paris-Defense Courbevoie, Hauts de Seine, France

No Drawing. Filed June 28, 1971, Ser. No. 157,643
Claims priority, application France, June 29, 1970, 7023984
Int. Cl. C07d 5/42
U.S. Cl. 260—346.2 R 4 Claims

2-Nitrobenzofurans, made by interaction of salicylic aldehydes and halogeno-nitro-methane, have useful therapeutic properties as antimicrobial agents.

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3,838,174

## 3-PHENYL-3-ORTHO AMINO PHENYL-PHTHALANOLS

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 224,603, Feb. 8, 1972. This application Oct. 18, 1972, Ser. No. 298,601
Int. Cl. C07d 5/34
U.S. Cl. 260—346.2 R 8 Claims

Phthalanols disubstituted in the 3-position, e.g. 3-(4-chlorophenyl) - 3 - (2-dimethylaminomethyl phenyl)-1-methyl-1-phthalanol, prepared by alkylating corresponding phthalides, are useful as anti-inflammatory agents.

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3,838,175

## PROCESS FOR THE PRODUCTION OF HARDENABLE CYCLOALIPHATIC GLYCIDYL ETHERS

Clau Berther, Chur, Grisons, Manfred Wenzler, Ems, Grisons, and Hans-Joachim Schultze and Manfred Hoppe, Chur, Grisons, Switzerland, assignors to Inventa A.G. fur Forschung und Patentverwertung, Zurich, Switzerland

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,740
Claims priority, application Switzerland, Feb. 6, 1970, 1,711/70
Int. Cl. C07d 1/04, 1/18
U.S. Cl. 260—348 R 1 Claim

An epihalohydrin is reacted with a mixture of isomeric cyclododecanediols in the presence of a Lewis acid. The reaction product is dehydrohalogenated with alkali. The dehydrohalogenated reaction product, when hardened, suprisingly shows superior arc and surface leakage current strength as compared with conventional hardened epoxy resins. The mixture of isomeric cyclododecanediols preferable has a diol content of 95–100% by weight.

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3,838,176

## EPOXY SUBSTITUTED 2,4-DIENETHIOATES

Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Original application Feb. 16, 1971, Ser. No. 115,725, now Patent No. 3,706,733. Divided and this application Aug. 18, 1972, Ser. No. 281,885
Int. Cl. C07d 1/22
U.S. Cl. 260—348 A 8 Claims

Polyunsaturated aliphatic hydrocarbon thiolesters, nitriles, amines, halides, alcohols and derivatives thereof, synthesis thereof, for the control of arthropods.

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3,838,177

## SUBSTITUTED 9,10-DIHYDROANTHRACENES

Arthur D. Sill, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,129
Int. Cl. C07c 93/06
U.S. Cl. 260—351 4 Claims

Novel 9,10-alkylidene-2,6 and 2,7-bis basic ethers of 9,10-dihydroanthracene, their preparation and use for the prevention and inhibition of viral infections are disclosed.

3,838,178

## 2-ALKYL-SUBSTITUTED-1,2,3,4-TETRAHYDRO-ANTHRAQUINONES

Lawrence Graham Vaughan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 20, 1972, Ser. No. 264,577
Int. Cl. C07c 49/68
U.S. Cl. 260—369 8 Claims

2 - alkyl - substituted - 1,2,3,4, - tetrahydroanthraquinones are provided which may also be alkyl substituted in the 6- and/or 7-position. These compounds are provided by condensing a naphthoquinone with an alkyl-substituted butadiene, catalytically hydrogenating the adduct, then oxidizing the resulting hexahydro compound to the desired tetrahydroanthraquinone. Alternatively, the condensation product may be oxidized with a cupric compound or with air plus a weak base, and this compound catalytically hydrogenated and then oxidized to the corresponding tetrahydroanthraquinone. The compounds of this invention exhibit superior solubility in solvents commonly used in the cyclic process for manufacturing $H_2O_2$ and thus enhance $H_2O_2$ production.

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3,838,179

## PROCESS FOR MANUFACTURING ALCOHOLS BY OXIDATION OF SATURATED HYDROCARBONS CONTAINING FROM 5 TO 8 CARBON ATOMS PER MOLECULE

Jacob Alagy, La Celle-Saint-Cloud, Christian Busson, Rueil-Malmaison, and Bernard Cha, Chatou, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

No Drawing. Filed May 16, 1967, Ser. No. 638,719
Claims priority, application France, May 25, 1966, 62,988; Jan. 18, 1967, 91,680
Int. Cl. C07c 29/12, 45/02
U.S. Cl. 260—586 AB 6 Claims

The present disclosure is directed to a process for converting saturated hydrocarbons containing from 5 to 8 carbon atoms in the molecule to corresponding alcohols and ketones of the same number of carbon atoms which comprises contacting said hydrocarbons in the liquid phase with an oxidizing gas in the presence of a boron compound, said oxidizing gas being introduced at a temperature between about 100 to 220° C., hydrolysing the reaction product and separating the obtained alcohols and ketones, said oxidizing gas containing a mixture of air and a vapor of the hydrocarbon to be oxidized which has been preliminary preheated to a temperature of about 140 to 190° C.

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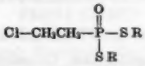
3,838,180

## 2-CHLOROETHYL PHOSPHONODITHIOATE ESTERS

David I. Randall and Robert W. Wynn, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Nov. 10, 1969, Ser. No. 875,574
Int. Cl. A01n 9/36; C07f 9/40
U.S. Cl. 260—961 8 Claims

2-Chloroethyl phosphonodithioate esters, useful as plant growth regulators for increased fruiting are of the following formula:



wherein R is an alkyl group of 1 to 2 carbon atoms, halo-substituted alkyl of 1 to 2 carbon atoms, aryl of 6 to 12 carbon atoms, halo-substituted aryl of 6 to 12 carbon atoms or aralkyl. The compounds are produced by the reaction of a 2-chloroethyl phosphonyl halide with a mercaptan of the formula RSH in the presence of an acid acceptor.

3,838,181

## PROCESS FOR THE PREPARATION OF ALKYL SUBSTITUTED RESORCINOLS

Arnold Brossi, Verona, and Antonino Focella and Sidney Teitel, Clifton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 22, 1969, Ser. No. 793,191, now Patent No. 3,790,636. Divided and this application Sept. 16, 1971, Ser. No. 181,254

Int. Cl. C07c *39/08*

U.S. Cl. 260—625 1 Claim

Preparation of 5-alkyl substituted resorcinols such as olivetol from aliphatic aldehydes and intermediates in this process.

3,838,182

## HYDROLYSIS OF ARYL HALIDES WITH METAL PHOSPHATES

William L. Kehl and Raymond J. Rennard, Jr., Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 103,003, Dec. 30, 1970, now Patent No. 3,752,878. This application Feb. 25, 1971, Ser. No. 118,940

Int. Cl. C07c *37/02*

U.S. Cl. 260—629 28 Claims

Aryl halides, such as chloroxylene, are hydrolyzed to the corresponding ring hydroxylated aryl compounds, such as xylenol, by contacting the aryl halides and steam with a rare earth metal phosphate catalyst, such as lanthanum phosphate, cerium phosphate and neodymium phosphate. A method of preparing the rare earth metal phosphate is also disclosed. The addition of small amounts of copper greatly improves the activity of the rare earth metal phosphate or yttrium phosphate for the hydrolysis reaction.

3,838,183

## SYNTHESIS OF 2-METHYL-3-BUTEN-2-OL

Pius Anton Wehrli, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed June 9, 1971, Ser. No. 151,557

Int. Cl. C07c *33/02, 29/28*

U.S. Cl. 260—640 3 Claims

A process for producing 2-methyl-3-buten-2-ol by reacting isoprene with a hydrohalide and then with an aqueous base and then distilling the aqueous mixture in the presence of excess base to maintain the reaction mixture during distillation at a pH of at least 4.

3,838,184

## PROCESS FOR PRODUCING FUEL AND BREEDER BODIES FOR A NUCLEAR REACTOR

Ernö Gyarmati and Hubertus Nickel, Julich, Germany, assignors to Kernforschungsanlage Julich GmbH, Julich, Germany

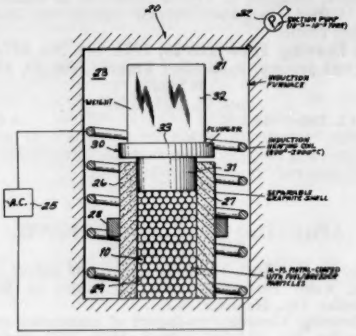
Filed Dec. 1, 1970, Ser. No. 94,115

Claims priority, application Germany, Dec. 3, 1969, P 19 60 531.3

Int. Cl. G21c *3/04, 3/28*

U.S. Cl. 264—.5 1 Claim

Metal-coated or metal-sheathed fuel or breeder cores form particles which are piled and, under a vacuum of $10^{-3}$ to $10^{-5}$ torr and at a temperature of 800°–2000° C., are sintered under a mechanical pressure of several 100 ponds/cm.$^2$. Such configurations are composite bodies, which are fuel elements or parts of fuel elements respectively. The metal covering of the particles has a high melting point and may be molybdenum, zirconium, vanadium



or niobium and, at each fusion interface, diffuses with the metal of the neighboring shell. The interstices between the sintered particles form coolant channels.

3,838,185

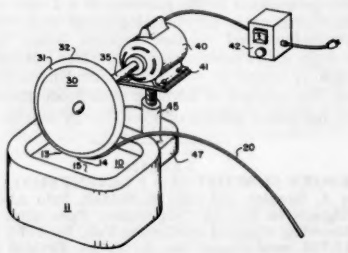
## FORMATION OF FILAMENTS DIRECTLY FROM MOLTEN MATERIAL

Robert E. Maringer, Worthington, Ohio, Alfred Rudnick, Tel Aviv, Israel, and Carroll E. Mobley, Columbus, Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of abandoned application Ser. No. 147,390, May 27, 1971. This application May 10, 1972, Ser. No. 251,985

Int. Cl. B01j *2/02*

U.S. Cl. 264—8 19 Claims



A method for producing continuous or controlled length discontinuous products having a small cross-sectional area such as filaments or wire directly from a pool-like source of molten metal or a molten inorganic compound having a surface tension and viscosity similar to that of a molten metal consisting of forming such products by the application of a rotating disk-shaped member to the surface of the pool or molten material so as to form the material into the desired shape by extracting a filamentary form of material from the supply of molten material. The final shape of the product is determined by the physical shape of the member, the temperature and material composition of the melt as well as the velocity of the member in contact with the melt. The invention does not rely on any type of orifice or the mechanical removal of the product from the moving member.

3,838,186

## WAX TREATMENT OF PARTICULATE MATERIAL

Leslie Jasper Ahrens, Durban, Natal, Republic of South Africa, assignor to Process Wax and Resin Products (Proprietary) Limited, Jacobs, Natal, Republic of South Africa

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,708

Claims priority, application Republic of South Africa, Apr. 29, 1971, 71/2,773

Int. Cl. B29c *23/00*; C08f *45/52*

U.S. Cl. 264—12 2 Claims

The invention relates to wax compositions particularly for the wax treatment of particulate wood and other fibrous products, comprising a fibrillated mass, the fibres of which have a plurality of free-ended strands, prepared by blowing a wax composition containing a wax and polyolefin.

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3,838,187

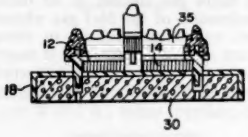
## DENTAL MODEL CONSTRUCTION METHOD

John M. Thomas, Webster, N.Y., assignor to Thomas Technadent Products, Inc., Rochester, N.Y.

Continuation-in-part of application Ser. No. 88,913, Nov. 12, 1970, which is a division of application Ser. No. 696,301, Jan. 8, 1969, both now abandoned, which in turn is a continuation-in-part of application Ser. No. 784,539, Dec. 9, 1968, now Patent No. 3,581,398. This application Apr. 26, 1972, Ser. No. 247,547

Int. Cl. A61c *13/00*

U.S. Cl. 264—17 8 Claims




A dental model is made by forming a keying matrix to closely fit a corrugated surface of an arch-shaped key which is then inserted into a casting of a dental model. After the casting has set to bond the model to the key, the keyed model is cut to separate various teeth of the model desired, and the parts of the model are inserted and removed from the matrix as desired for working on the model.

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3,838,188

## VACUUM BAKED COMPOSITE MOLDED CARBONACEOUS ELECTRODES

William F. Farrell, Jr., Williamsville, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Filed June 29, 1972, Ser. No. 267,274

Int. Cl. C01b *31/00*

U.S. Cl. 264—29 12 Claims

Composite molded carbonaceous EDM electrodes consisting essentially of 60–100 parts of at least partially graphitized carbon particles, up to 40 parts ungraphitized carbon particles, and 5–25 parts carbonized cured phenol-aldehyde novolac resin matrix bonding together the graphitized and ungraphitized carbon particles, are made by (1) coating the particles with a phenol-aldehyde novolac resin; (2) molding the coated particles into a resin-bonded composite body; and (3) baking the resin-bonded composite body to carbonize the bonding matrix, in an oxygen-free environment which has been flushed to remove traces of oxygen. The finished electrodes are, as compared to similar EDM electrodes baked in a nitrogen atmosphere, surprisingly superior in their performance during machining, as particularly characterized by a lack of localized arcing during machining. The electrodes are also characterized by their apparent freedom from surface oxidation; their surface hardness; and unchanged or increased average surface hardness during baking, rather than the decreased average surface hardness during baking which is characteristic of minute surface oxidation of the electrodes.

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## ERRATUM

For Class 264—94 see:
Patent No. 3,838,142

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3,838,189

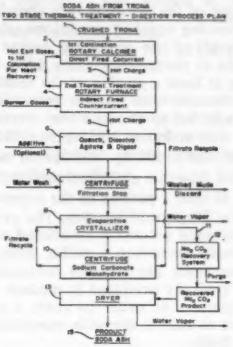
## TWO-STAGE PROCESS FOR PRODUCING SODA ASH FROM TRONA

Peter Sopchak, Liverpool, and Joel P. Guptill, Syracuse, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,855

Int. Cl. C01d *7/00*, *7/22*, *7/30*

U.S. Cl. 423—184 4 Claims




Two step calcination process for preparing sodium carbonate from trona, comprising a low temperature calcination to convert the contained sesquicarbonate to sodium carbonate, followed by a high temperature roasting step of short duration to eliminate contained organic matter while minimizing solubilization of contained silica.

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3,838,190

## PROCESS FOR THE REMOVAL OF MERCURY FROM GASES

Lutz Georg Birke, Oslo, Aksel Jebens, Hosle, Ivar Eystein, Ruyter, Oslo, and Froystein Dyvik, Odda, Norway, assignors to Det Norske Zinkkompani A/S, Odda, Norway

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,807

Claims priority, application Norway, Jan. 14, 1971, 133/71

Int. Cl. B01d *53/34*

U.S. Cl. 423—210 4 Claims

Removal of mercury from gases, in particular gases from combustion or roasting, is achieved by washing the

gases with sulphuric acid of at least 50% having a temperature of 60 to 180° C. The washing acid and the gases contain chlorine or chlorine compounds or both chlorine and chlorine compounds in such an amount that the atomic ratio Cl/Hg is at least 1:1. Practically all mercury and other mercury compounds are converted to mercury chlorides which are separated by condensation in a succeeding cooling of the gas.

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3,838,191

## CONTINUOUS PROCESS FOR SCRUBBING $SO_2$ FROM A GAS STREAM CONTAINING $SO_2$ AND $O_2$

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 226,018, Feb. 14, 1972, which is a continuation-in-part of application Ser. No. 9,968, Feb. 9, 1970, now Patent No. 3,644,087, dated Feb. 22, 1972. This application Mar. 12, 1973, Ser. No. 340,425

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 22 Claims

An input gas stream containing $SO_2$ and $O_2$ is continuously treated in order to remove a substantial portion of the $SO_2$ therefrom by the steps of: (a) scrubbing the input gas stream with an aqueous absorbent containing an alkaline reagent and a first reducing agent to produce a treated gas stream and a rich absorbent containing a mixture of sulfite and thiosulfate compounds; (b) treating at least a portion of the resulting rich absorbent stream with a second reducing agent at conditions selected to convert substantially all of the remaining sulfite compound contained therein to the corresponding thiosulfate compound; (c) reacting at least a portion of the resulting thiosulfate-rich water stream with carbon monoxide at reduction conditions selected to produce the corresponding sulfide compound; (d) stripping hydrogen sulfide from at least a portion of the resulting sulfide-rich solution to form a regenerated aqueous absorbent stream; and, thereafter, (e) passing at least a portion of the regenerated absorbent stream to the $SO_2$-scrubbing step. The principal utility of this $SO_2$-scrubbing process is associated with the problem of continuously removing a sulfur dioxide contaminant from flue or stack gas streams containing $SO_2$ and $O_2$ such as are typically produced in modern electrical power generating stations in order to abate a serious pollution problem and to enable the safe, nonpolluting burning of high sulfur fuels.

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3,838,192

## PRODUCTION OF ALKALI METAL POLYSILICATES

Orlando L. Bertorelli and Robert K. Mays, Havre de Grace, and Lloyd E. Williams, Bel Air, Md., and Howard F. Zimmerman, Jr., Athens, Tenn., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Oct. 28, 1971, Ser. No. 193,485

Int. Cl. C01b *33/32*

U.S. Cl. 423—334 1 Claim

A method for producing alkali metal polysilicates and their use as builders in detergents is disclosed. The polysilicates are produced by hydrothermally reacting, under certain controlled conditions, an aqueous dispersion of finely-divided silica and an alkali metal hydroxide. The synthesized reaction mixture is then spray dried and the solid product fractured, pulverized and agitated in a rotating drum to form a product having particularly advantageous properties. The products of the invention can be used in adhesives, in the production of silica gel, in textiles and the like. However, their use as builders in detergents and in combination with known anionic, nonionic and amphoteric surface active compounds (surfactants) is disclosed and claimed.

3,838,193

## METHOD OF TREATING NITROGEN OXIDE GENERATING SUBSTANCES BY COMBUSTION

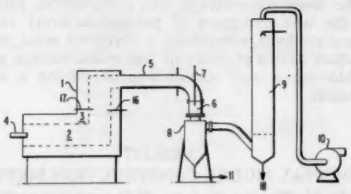
Yoshiaki Kajitani, Ibaragi, and Hayami Ito and Susumu Mitsuda, Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Hyogo, Japan

Filed Mar. 13, 1972, Ser. No. 234,155

Claims priority, application Japan, Mar. 13, 1971, 46/13,851

Int. Cl. C01b *21/00, 21/24*

U.S. Cl. 423—351 8 Claims



A method of treating nitrogen oxide generating substances by combustion in a reducing flame atmosphere which has the steps of introducing the substance which generates nitrogen oxide by combustion, such as ammonia, hydrogen cyanide or other nitrogen containing gases or a mixture of these gases, into a high temperature reducing flame produced by the combustion of fuel gas containing hydrogen, carbon monoxide, a gaseous hydrocarbon and mixtures thereof, with a primary air supplied in an amount below the amount of air theoretically required for combustion of the fuel gas whereby the generated nitrogen oxides are reduced to nitrogen in the high temperature reducing flame, and if required supplying a third air to the relatively high temperature portion out of the flame thereby burning any unburned components.

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3,838,194

## PROCESS FOR MAKING HEXAGONAL MACROCRYSTALS OF ALUMINUM HYDRIDE

Paul F. Reigler, Midland, and Lz F. Lamoria, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 22, 1967, Ser. No. 627,247

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 3 Claims

An improvement in a process for preparing large crystals of substantially non-ether solvated, crystalline aluminum hydride by heating an aluminum hydride source material in an ether containing solution. The present improvement comprises employing a slurry of aluminum hydride n-propyl etherate as the aluminum source material thereby providing the unexpected advantages of not having to distill ether from the reaction mass or to maintain an elevated pressure on the system as required in the process as practiced heretofore.

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3,838,195

## PROCESS FOR MAKING CRYSTALLINE, NON-SOLVATED ALUMINUM HYDRIDE

Paul F. Reigler and Reinhold Hellmann, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 23, 1967, Ser. No. 678,486

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 4 Claims

An improved process for preparing macrocrystalline, substantially non-ether solvated aluminum hydride wherein an ethereal aluminum hydride reactant solution is introduced into a crystallizing liquid having a boiling point

higher than that of the ether but below 80° C. and the resulting conversion liquid is maintained at a predetermined boiling point with the ether volume being controlled to a maximum of 8% of the liquid whereupon nonsolvated aluminum hydride crystals nucleate and grow therein.

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3,838,196

## METHOD OF TREATING ARTERIOSCLEROSIS

James B. Mercer, Lenexa, Kans., assignor to James B. Mercer, Lenexa, Kans., and Neil B. Purdy, Wauconda, Ill.

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,563
Int. Cl. A61k *27/00*
U.S. Cl. 424—319 1 Claim

A treatment for aberrant calcium related deposits in animal tissues, including arteriosclerosis, comprises the oral administration of EDTA concurrently with monitoring for depletion of metabolic trace metals, and replacement of the trace metals as indicated.

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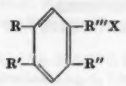
3,838,197

## AMINO DERIVATIVES OF TETRASUBSTITUTED BENZENE COMPOUNDS

John J. Merianos, Jersey City, and Phillip Adams, Murray Hill, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 130,783, Apr. 2, 1971. This application Sept. 25, 1972, Ser. No. 291,824
Int. Cl. A01n *9/24*
U.S. Cl. 424—330 2 Claims

Antimicrobial 1,2,4,5-tetrasubstituted benzenes having the structure:




wherein R and R′ may be methyl, or a halogen when R‴ is —$CH_2$—; or R and R′, taken together, may be methylene dioxy; R″ may be methyl or nitro; R‴ may be absent or may be —$CH_2$— or —CH=; and X is the residue of a substituted amino or a polyamino radical.

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3,838,198

## CONDITIONING RAW WASTE INPUT FOR DIGESTION BY THERMOPHILIC AEROBIC MICROORGANISMS

Winthrop D. Bellamy, Schenectady, and Ananda M. Chakrabarty, Latham, N.Y., assignors to General Electric Company

Filed Mar. 1, 1972, Ser. No. 230,668
Int. Cl. A23k *1/00*
U.S. Cl. 426—53 6 Claims

Animal waste, particularly excrement from ruminants, to be subjected to degradation by thermophilic aerobic microorganisms is subjected to pretreatment in which the raw waste is mixed with waste liquor (from the reacted waste mixture leaving the thermophilic aerobic growth chamber) and is heated to a temperature in the range of from about 75° C. to about 85° C. This pretreatment is of particular advantage when the thermophilic organisms employed for the digestion are productive of soluble (detached) extra-cellular enzymes that will degrade cellulose.

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3,838,199

## PROCESS FOR RECOVERING FEED PRODUCTS FROM ANIMAL WASTE

Warren B. Coe, Simsbury, and Arthur K. Davenport, North Granby, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 8, 1972, Ser. No. 251,491
Int. Cl. A23k *1/00*
U.S. Cl. 426—55 4 Claims

By thermophilic anaerobic fermentation, the excretion and excrement from animals is recycled into an animal feed ingredient and a fuel gas which gas is utilized to power the various components of the system and is characterized as being self-sustaining.

## 3,838,200
## METHOD FOR ELECTROSLAG REMELTING WITH SLAG INTRODUCTION AND EQUALIZED PLURAL ELECTRODE REMELTING

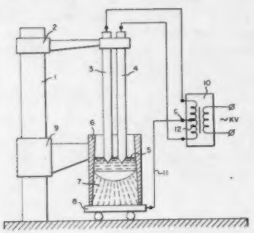
**Boris Evgenievich Paton; Vladimir Konstantinovich Lebedev; Boris Izrailevich Medovar; Jury Vadimovich Latash; Oleg Petrovich Bondarenko; Vitaly Mikhailovich Baglai; Mikhail Nikolaevich Sidorenko, all of Kiev; Semen Abramovich Leibenzon; Gary Petrovich Kaganovsky, both of Zaporozhie; Andrei Pavlovich Altgauzen, Moscow; Leonid Evgenievich Nikolsky, Moscow; Zoya Alexandrovna Gorynina, Moscow; Ljudmila Andreevna Safronova, Moscow; Leonid Savvich Katsevich, Moscow; Lev Avramovich Volokhonsky, Moscow; Alexandr Alexandrovich Nikulin, Moscow; Vladimir Dmitrievich Artemiev, Moscow; Vladimir Mikhailovich Edemsky, Moskovskaya, and Georgy Alexandrovich Voronin, Moscow, all of U.S.S.R., assignors to Institut Elektrosvarki I.M.E.O. Patona, Kiev, U.S.S.R.**

**Division of Ser. No. 87,044, Nov. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 76,205, Sept. 28, 1970, Pat. No. 3,709,283, which is a continuation of Ser. No. 676,873, Oct. 20, 1967, abandoned. This application Oct. 19, 1972, Ser. No. 298,949**

**Claims priority, application U.S.S.R., Dec. 24, 1966, 1118607; Dec. 24, 1966, 1118608. The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.**

**Int. Cl. H05b** *3/60*

**U.S. Cl. 13—9** **19 Claims**



In an electroslag remelting installation, a pair of consumable electrodes are immersed into a molten slag bath contained in a mold, which can be cooled by various arrangements of cooling liquid. The molten slag is introduced into the mold through a passage through the lower portion of the mold. AC electrical power is applied between the electrodes to cause current flow through the electrodes and through the molten slag bath and part of the molten metal pool, thereby heating and causing the electrodes to melt to form an ingot. As the electrodes melt, they are simultaneously fed together into the slag bath. A conductor, connected between the bottom plate of the mold and either a center tap on the secondary winding of the transformer supplying AC power to the electrodes or to a center tap on a choke coil connected in parallel with the secondary winding, provides an equalizing circuit which automatically adjusts the melting of the electrodes to keep them at equal immersion depths in the slag bath. Electrical lines and connectors are grouped in close arrangement and in parallel paths where possible to avoid inductance losses.

## 3,838,201
## FREQUENCY SIMULATOR FOR EW TRAINING DEVICE

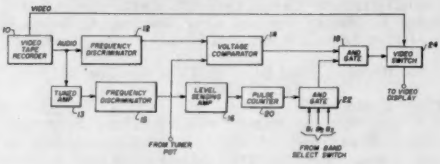
**Bobby C. Appling, 207 Stephora Ave., Covina, Calif. 91724**

**Filed June 25, 1973, Ser. No. 373,074**

**Int. Cl. G09b** *9/00*

**U.S. Cl. 35—10.4** **4 Claims**

Frequency simulator apparatus for use with passive, electronic warfare (EW) training devices to render more effective and realistic signal recognition training of operators. A video switching network is connected between the output of a video tape recorder and the video circuits of a passive EW receiver set. Prerecorded radar video signals will not be displayed on the receiver set until the operator selects at the receiver set




the proper frequency band and tunes the receiver to the proper frequency within that band to thereby actuate the switching network with a voltage indicating that the proper band has been selected and another voltage indicating that the proper frequency has been tuned to.

## 3,838,202
## DEVICE FOR IMPARTING TO A MUSICAL TONE A TONE COLOR VARIED WITH TIME

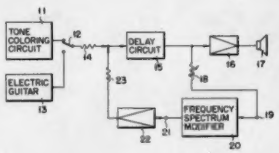
**Akira Nakada, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan**

**Filed Sept. 17, 1973, Ser. No. 397,747**

**Claims priority, application Japan, Sept. 19, 1972, 47-93856; Sept. 19, 1972, 47-93863**

**Int. Cl. G10h** *1/02*

**U.S. Cl. 84—1.24** **21 Claims**




A device comprises a variable delay circuit for delaying a musical tone signal; means for varying a delay time of the variable delay circuit; a frequency spectrum modifier to which an output signal from the delay circuit is applied; and a feedback loop for feeding an output of the frequency spectrum modifier back to the input side of the variable delay circuit; whereby a musical tone signal to which is applied a tone color varied with time is obtained from the output side of the variable delay circuit.

## 3,838,203
## INSERTABLE ELECTRICAL TERMINATION MOUNTING

**James D. Brandlein, and Max E. Potter, both of Indianapolis, Ind., assignors to Western Electric Company, Incorporated, New York, N.Y.**

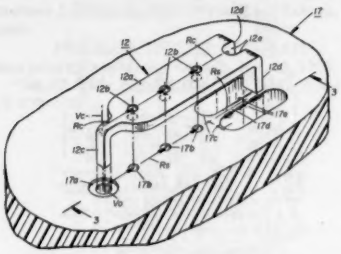
**Filed July 3, 1973, Ser. No. 376,257**

**Int. Cl. H05k** *1/02*

**U.S. Cl. 174—68.5** **11 Claims**

A substrate and an electrical termination mounting in the form of a connector strap are constructed so that the strap can be accurately pressed into position on the substrate to establish a circuit path thereon without deformation of the strap, so as to locate preformed electrical termination-receiving apertures in the strap and the substrate in axial alignment. Initially, axes of first securing elements on the connector strap

and the substrate are aligned to locate the apertures in the strap radially with respect to the aligned axes, and second securing elements on the strap and the substrate are aligned to locate the apertures in the strap circumferentially about the aligned axes, thereby aligning respective ones of the apertures



in the strap and the substrate. The strap then is pressed into a secured position on one side of the substrate, after which conductor wires or component leads may be inserted through respective aligned apertures in the strap and the substrate from the opposite side of the substrate, and soldered to the strap.

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**3,838,204**

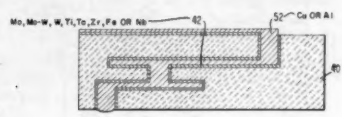
**MULTILAYER CIRCUITS**

**Junghi Ahn, Wappingers Falls; Bernard Schwartz, Poughkeepsie, and David L. Wilcox, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Continuation of Ser. No. 538,770, March 30, 1966, abandoned. This application Aug. 6, 1969, Ser. No. 850,324**

**Int. Cl. H05k** *1/02, 3/24*

**U.S. Cl. 174—68.5** **3 Claims**




Multilevel ceramic high conductivity circuit structures are formed by depositing a metallizing media on surfaces of green ceramic sheets, including on walls of holes which extend through the sheets. The metallizing media includes metals and compounds which convert to a metal during firing. The sheets are stacked in registry, laminated into a monolithic structure and heated in a reducing atmosphere to sinter the ceramic to a dense body, and simultaneously fire the metallizing media to form an adherent metal capillary within the body. A high conductivity, low melting point conductor fills the capillary thereby forming a highly conductive circuit member within the multilevel ceramic structure.

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**3,838,205**

**ELECTRICALLY CONDUCTIVE PIPE COUPLING GASKET**

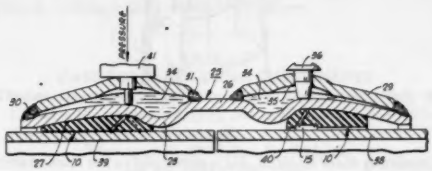
**George D. Kish, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.**

**Continuation of Ser. No. 866,128, Oct. 9, 1969, abandoned, which is a continuation of Ser. No. 634,714, April 28, 1967, abandoned. This application July 9, 1970, Ser. No. 56,178**

**Int. Cl. H02g** *15/08*

**U.S. Cl. 174—84 S** **8 Claims**

A gasket member formed as an annular ring to be employed in conjunction with a pipe coupling device. The ring is comprised of a dielectric elastomeric material and includes a distribution of embedded electrically conductive pins which



protrude through opposite surfaces of the annular to establish electrical continuity between the coupled pipe and the coupling member.

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**3,838,206**

**WIRE CONNECTOR FOR TWO ELECTRIC WIRES, WHICH MAY POSSIBLE BE CONNECTED TO ELECTRIC DETONATORS**

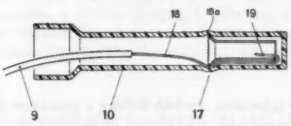
**Kjell Eklund, Orebro, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden**

**Filed Apr. 23, 1973, Ser. No. 353,489**

**Claims priority, application Sweden, May 12, 1972, 6276/72**

**Int. Cl. H01r** *7/06*

**U.S. Cl. 174—87** **6 Claims**




There is disclosed a connector for conductively connecting the stripped ends of two insulated conductor wires without requiring the use of tools or insulation material such as insulation tape. The connector comprises an outer sleeve into which is fitted a shorter inner sleeve. The stripped end of one of the conductors is inserted between the inner sleeve and the outer sleeve and secured to the inner sleeve. The inner sleeve is secured against axial displacement within the outer sleeve and rotation relative thereto. The stripped end of the second conductor is inserted into the inner sleeve and the stripped ends of both conductors are of a length such that they protrude from the inner sleeve into the outer sleeve. These protruding end portions are joined by helically twisting the wire ends by axially rotating the sleeve assembly while holding the conductor wires protruding from the outer sleeve.

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**3,838,207**

**ELECTRICAL INSULATING MEMBER SUCH AS A DISTRIBUTOR CAP**

**Wolfgang Anselment, and Walter Holl, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany**

**Filed Sept. 11, 1973, Ser. No. 396,193**

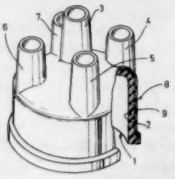
**Claims priority, application Germany, Sept. 12, 1972, 2244583**

**Int. Cl. H01r** *39/60;* **H01h** *19/06;* **H01b** *17/60*

**U.S. Cl. 174—138 F** **15 Claims**

A hollow insulating member has a wall which consists of two layers, one of which at least partly surrounds the other. One of

these layers is composed of an electrically insulating substance whereas the other of these layers is composed of a thermally



insulating foam material. Air is entrapped in the foam material, and may also be entrapped in an air gap between the two layers.

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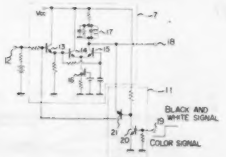
**3,838,208**
**CIRCUIT FOR REDUCING WHITE BALANCE VARIATIONS**

**Yoshihiro Fujiwara, Hirakata, and Norio Meki, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed Dec. 27, 1972, Ser. No. 318,768**
**Claims priority, application Japan, Dec. 28, 1971, 47-100**
**Int. Cl. H04n** *9/12*
**U.S. Cl. 178—5.4 BT** **4 Claims**




A color television receiver having a generator for generating a reference signal by means of ringing for applying this reference signal to a demodulator for the demodulation of a chrominance signal. In the receiver, an oscillator oscillating substantially at a frequency of 3.58 MHz is provided so as to apply its output to the demodulator during reception of a monochromatic television signal, thereby preventing undesirable variations of the white balance depending on the reception of a color television signal or monochromatic television signal irrespective of fluctuations of the characteristics of elements constituting the demodulator.

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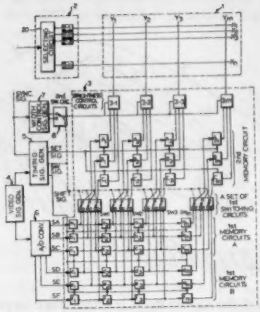
**3,838,209**
**SCANNING APPARATUS FOR A MATRIX DISPLAY PANEL**

**Mitsuharu Tsuchiya, Osaka; Teruo Sato, Kyoto; Hitoshi Takeda, Yamatokoriyama, and Masami Yoshiyama, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan**

**Filed June 5, 1973, Ser. No. 367,184**
**Claims priority, application Japan, June 8, 1972, 47-57493; June 20, 1972, 47-62204; June 20, 1972, 47-62212; Sept. 20, 1972, 47-94771**
**Int. Cl. H04n** *5/70*
**U.S. Cl. 178—7.3 D** **5 Claims**

A scanning apparatus for a matrix display panel having a plurality of picture elements at the intersections of X- and Y-line conductors. The scanning apparatus has an X-line driving circuit, Y-line driving circuit, a video signal generator, a timing signal generator, a width control signal generator, a second switching circuit and an analog-to-digital converter. The Y-line driving circuit has a plurality of sets of first memory circuits, a set of second memory circuits, a set of first switching circuits, and a set of brightness control circuits. The scanning apparatus is capable of reproducing moving images having many steps of gray scale from coded video signals having relatively few bits by digital circuits and is also capable of finely controlling the brightness by the efficient use of a horizontal sweep retrace period of the video signals with simplified circuits.



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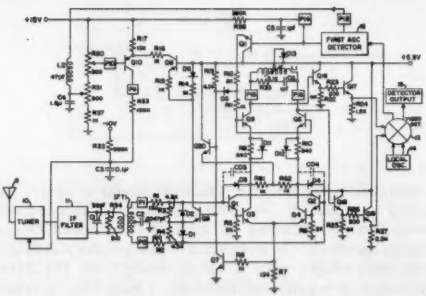
**3,838,210**
**AUTOMATIC GAIN CONTROL SYSTEM AND AMPLIFIER OF CONTROLLABLE GAIN**

**William Peil, North Syracuse, N.Y., assignor to General Electric Corporation, Syracuse, N.Y.**

**Filed Oct. 1, 1973, Ser. No. 402,073**
**Int. Cl. H04n** *5/52*
**U.S. Cl. 178—7.3 R** **9 Claims**




An automatic gain control system incorporating a novel amplifier of controllable gain is described. The amplifier is d.c. coupled throughout and capable of wideband operation. It employs a cascoded differential transistor amplifier for producing the principal voltage gain supplemented by input and output emitter followers. Gain control is achieved by the application of gain control potentials to the bases of the upper rank transistors. Gain reduction is produced first in the upper rank by the controlled degeneration produced by a pair of nonlinear impedances in series with the emitter leads of the upper rank transistors, and sequentially in the lower rank transistors by the controlled degeneration produced by two pairs of nonlinear impedances coupled in a degenerative feedback path about the lower rank transistors and in the input circuit to a pair of input emitter followers. In addition, the amplifier produces an indication of gain control action which, when the amplifier is used as an intermediate frequency amplifier of a television system, permits one to derive a second gain con-

trol signal, which after thresholding may be used for further gain reduction in the tuner. The amplifier is adapted for integrated circuit fabrication.

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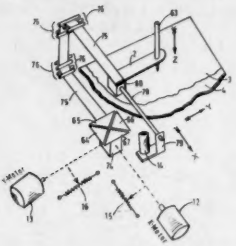
### 3,838,211
### TEACHING SYSTEM AND DEVICES

**Constantinos J. Joannou, 2008 Dorval Ave., Ottawa, Ontario, Canada**

**Filed Jan. 4, 1973, Ser. No. 320,851**
**Claims priority, application Canada, Jan. 10, 1972, 132,033**
**Int. Cl. G08c** *21/00*; **G09b** *5/04*; **G11b** *31/00*
**U.S. Cl. 178—18** **9 Claims**



In teaching certain subjects, it is necessary to communicate with the students using drawings as well as voice. Well known devices such as film, video tape and television have been used to automate the teaching process. Such devices, however, are expensive and difficult to use, especially by the teacher. This invention provides a system and devices used to implement the system, which enable automation of the teaching process, and which are relatively inexpensive and easy to use by both the teacher and student. Specifically, the invention pertains to an automated teaching system where a lecture consisting of voice and drawings or sketches and figures can be recorded on magnetic tape by means of an *x–y* record-reproduce device. The lecture, once recorded, may be duplicated many times and distributed among many students who can reproduce the recorded lecture on similar devices. The graphic information is reproduced on standard ordinary sheets of paper which the students may keep for later reference.

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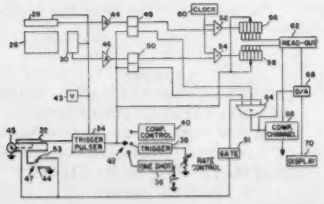
### 3,838,212
### GRAPHICAL DATA DEVICE

**Albert L. Whetstone, Southport, Conn.; Samuel Fine, New City, N.Y.; William Banks, Fairfield, and Stanley C. Phillips, Trumbull, both of Conn., assignors to Amperex Electronic Corporation, Hicksville, Long Island, N.Y.**

**Filed July 11, 1969, Ser. No. 841,058**
**Int. Cl. G08c** *21/00*
**U.S. Cl. 179—18** **12 Claims**



A graphical data device employing a stylus moving over an area to be digitized and utilizing a fast rise time sound energy shock wave, generated by a spark at the location of the stylus and propagated through the air for providing coordinate information as to the instantaneous position of the spark. Receiver devices are positioned along X and Y coordinates and respond to the leading edge of the air propagated shock wave front to provide an elapsed time indication from the moment of spark generation to the moment of shock wave reception. In a further embodiment, a three dimensional configuration is employed, utilizing a three coordinate receiver.

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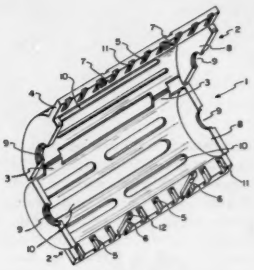
### 3,838,213
### CASE FOR ELECTRICAL COMPONENTS

**Thomas Georgopulos, and Maurice D. McCormick, both of Chicago, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Aug. 30, 1973, Ser. No. 393,266**
**Int. Cl. H01f** *17/08*, *15/02*
**U.S. Cl. 178—46** **9 Claims**



An insulating case for electrical components is disclosed, the case being principally composed of a pair of complementary sections which are hinged along one edge. Each of the sections includes a rib for holding a plurality of terminal means and the sections are provided with latch and catch means for releasably latching the sections in a closed position.

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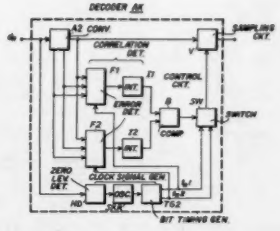
### 3,838,214
### SYNCHRONIZATION METHOD AND AN ARRANGEMENT FOR RECOVERY OF BINARY SIGNALS

**Kurt Bertil Reinhold Lind, Vastra Frolunda, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden**

**Filed Nov. 22, 1972, Ser. No. 308,810**
**Claims priority, application Sweden, Dec. 6, 1971, 15633/71**
**Int. Cl. H04l** *7/00*
**U.S. Cl. 178—69.5 R** **6 Claims**



A synchronization method and arrangement for recovery, at the receiver side of an information transmission equipment, of bit timing information during the transmission of a binary signal which at the transmitter side of the equipment is converted into a multilevel signal with correlative properties. From such multilevel signal, a binary signal conforming with the original binary signal is reconstructed at the receiver side. Bit timing information for sampling purposes at the receiver

side is obtained by detection of the times at which the multilevel signal reaches and/or leaves at least one specific level.

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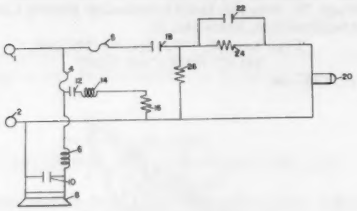
**3,838,215**

## SPEAKERS AND CROSSOVER CIRCUIT

**Edward N. Haynes, Jr., 1020 Ohio St., Lawrence, Kans. 66044**

**Filed Apr. 23, 1973, Ser. No. 349,531**
**Int. Cl. H04r 3/14**
**U.S. Cl. 179—1 D** **12 Claims**



A basic woofer, tweeter and crossover circuit apparatus is provided for directing lower frequencies to the woofer and higher frequencies to the tweeter with good circuit impedance constancy and with good woofer and tweeter frequency response characteristics. In a modification of the basic circuit an additional circuit is added to boost lower tweeter frequency signals to the tweeter and to further attenuate mid-range tweeter frequency signals to the tweeter. Also provided is a woofer, mid-range tweeter, high-range tweeter and crossover circuit apparatus for directing lower frequencies to the woofer, mid-range frequencies to the mid-range tweeter and high range frequencies to the high-range tweeter with good circuit impedance constancy and with good woofer, mid-range tweeter and high-range tweeter frequency response characteristics.

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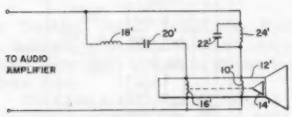
**3,838,216**

## DEVICE TO EFFECTIVELY ELIMINATE THE MOTION INDUCED BACK EMF IN A LOUDSPEAKER SYSTEM IN THE REGION OF FUNDAMENTAL ACOUSTIC RESONANCE

**William H. Watkins, 1244 Caribbean Dr., Kingsport, Tenn. 37660**

**Continuation of Ser. No. 228,547, Feb. 23, 1972, abandoned. This application June 14, 1973, Ser. No. 370,046**
**Int. Cl. H04r 9/00**
**U.S. Cl. 179—1 A** **11 Claims**




A loudspeaker system is provided wherein a circuit, including a second voice coil and a series LC resonant circuit, is connected in parallel with the conventional voice coil. The impedance of the second voice coil is lower than that of the conventional coil and the resonant circuit is designed to resonate at the fundamental acoustical resonant frequency of the speaker cone so that a low impedance path for audio amplifier drive current is provided in the region of resonance. The second coil is ineffective at frequencies off resonance and by proper choice of the impedance of this coil, the speaker response at resonance can be matched to that off resonance. A parallel LC resonant circuit connected in series with the conventional coil is designed to effectively remove this coil at resonance and hence eliminate the effect of the back e.m.f. generated thereby.

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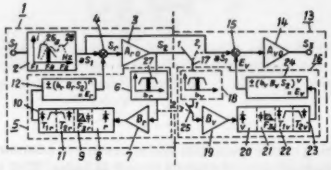
**3,838,217**

## AMPLITUDE REGULATOR MEANS FOR SEPARATING FREQUENCY VARIATIONS AND AMPLITUDE VARIATIONS OF ELECTRICAL SIGNALS

**Jean Albert Dreyfus, 5, Avenue de la Grenade, Geneva, Switzerland**

**Filed Mar. 1, 1971, Ser. No. 122,612**
**Claims priority, application Switzerland, Mar. 4, 1970, 3056/70; Sept. 22, 1970, 13922/70**
**Int. Cl. H04r 3/00**
**U.S. Cl. 179—1 A** **9 Claims**



Amplitude regulator for electrical signals connected to filter means, comprising an amplifier, the gain of which can be varied by a loop chain incorporating a loop amplifier, a rectifier and a low-pass filter.

The amplitude regulator can comprise a first amplifier the gain of which can be varied in the reverse direction (feedback) by a first loop chain, and a second amplifier the gain of which can be varied in the forward direction (feed forward) by a second loop chain, the output signal of the first amplifier being connected to the input of the loop chain of the second amplifier and further the input signal of the first amplifier becoming the input signal of the second amplifier. Such a "-double loop amplitude regulator" allows to separate the spectrum information (frequency variations) from the dynamics variation (amplitude variation).

The filter means and the electrical parameters may be selected in such a way:

that a fundamental frequency of an input signal can be extracted;

that further the spectrum components of an input signal can be equalized;

that further the build-up and the decaying time constants of the loop chain signal can be regulated independently from another;

that further the boundaries of the filter means can be moved in response to the variations of the frequency components of said input signals.

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**3,838,218**

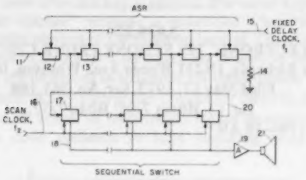
## BIFREQUENCY CONTROLLED ANALOG SHIFT REGISTER SPEECH PROCESSOR

**Charles E. Pfund, West Newton, Mass., assignor to Cambridge Research and Development Group, Westport, Conn.**

**Filed Mar. 7, 1972, Ser. No. 232,495**
**Int. Cl. G10l 1/00**
**U.S. Cl. 179—1 SA** **1 Claim**

A processor for recorded speech and other sounds uses an analog shift register operating at one clock frequency to propogate speech signals through the register while a second clock frequency is used to sequentially shift signal values from

each stage of the shift register to a common output where they are combined to operate an audio reproducer. The relative




frequencies of the two clocks determines the frequency transformation ratio between the input and output signals.

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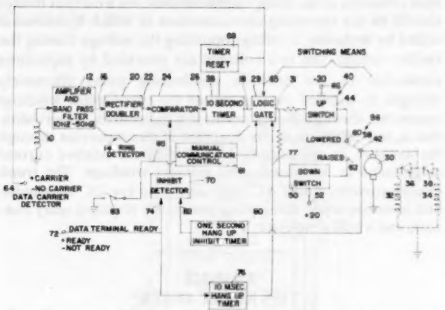
## 3,838,219
## AUTOMATIC TELEPHONE ANSWERING DEVICE FOR USE WITH A DATA MODEM

**Edwin E. Mason, Rockbridge, Ohio, assignor to MI , Inc., Columbus, Ohio**

**Filed Dec. 26, 1972, Ser. No. 318,523**
**Int. Cl. H04m** *11/06*
**U.S. Cl. 179—2 DP** **9 Claims**




A device physically mounted on a telephone base and extending onto the handset cradle of the base while the handset is mounted in an acoustic data coupler. The device automatically answers a ringing telephone by sensing the ring and effecting the raising of the handset cradle switch buttons. A transmitted carrier is detected by an associated modem and maintains the telephone in an off hook condition until communication is ended or until the condition of the data terminal no longer permits reception of data.

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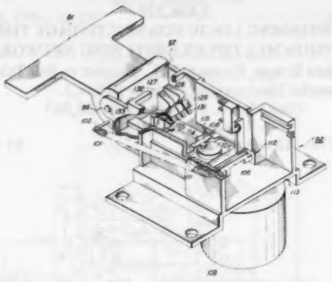
## 3,838,220
## CONTROLLER FOR AUTOMATICALLY ANSWERING AND DISCONNECTING CALLS TO AND FROM TELEPHONE INTERFACED FACSIMILE TERMINALS

**John F. Gormly, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Feb. 28, 1973, Ser. No. 336,596**
**Int. Cl. H04m** *11/08*
**U.S. Cl. 179—3** **12 Claims**

A controller for automatically answering and disconnecting calls to and from telephone interfaced facsimile terminals is compatible with conventional installations of ordinary telephone sets. The controller comprises an actuator arm for mechanically operating the cradle switch of an associated telephone set, a driver for the actuator arm, and a control circuit for the driver. If desired, the controller may be overriden by disengaging the actuator arm from the driver. Otherwise, however, the actuator arm is moved away from and toward the cradle switch by the driver in response to control signals supplied by the control circuit. To that end, incoming calls to be answered are sensed by inductively detecting any ringing voltage applied to the telephone set, and incoming or outgoing calls to be disconnected are sensed by a "time out" operation which is initiated whenever the associated facsimile unit stops while the telephone set is "off-hook."



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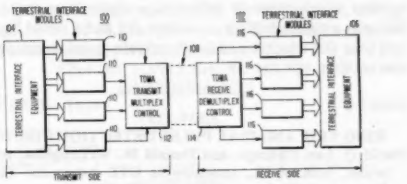
## 3,838,221
## TDMA SATELLITE COMMUNICATIONS SYSTEM HAVING SPECIAL REFERENCE BURSTS

**William G. Schmidt, Rockville; Ova G. Gabbard, Germantown, both of Md.; John M. Husted, Vienna, Va.; Wilfrid G. Maillet, Oxon Hill, Md., and Kunishi Nosaka, Tokyo, Japan, assignors to Communications Satellite Corporation, Washington, D.C., by said Schmidt, Gabbard, Husted and Maillet and Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan, by said Nosaka**

**Filed Aug. 11, 1971, Ser. No. 170,796**
**Int. Cl. H04j** *3/06*
**U.S. Cl. 179—15 BS** **4 Claims**




In a satellite transponder communications system operating in a time division multiple access mode, each earth station transmits data in a burst format. All bursts within a single transponder frame are synchronized to a special reference burst which contains no data communications. A single earth station sends out the reference burst as well as its normal burst, and in the case of multi transponders and multi transponder frames, the single reference station sends out all of the reference bursts for the various transponder frames. Data to be transmitted may be received in many different forms and included within the same burst because of the modular arrangement of the earth stations. Individual terrestrial interface modules receive data in various forms, convert the data into bit form which is compatible with the TDMA system, store the converted bit stream and hold the compressed block of data until a multiplexer requests the block of data for inclusion into the earth station's transmitted burst. The arrangement of blocks of data within a burst and the timing and duration of a burst is controlled by digital words stored in a memory. Complete reordering of burst times and the arrangement of blocks of data within a burst is accomplished by changing the

words stored in the memory. A comparable system on the receive side of the earth station extracts blocks of data in selected bursts for conveyance to selected terrestrial interface modules.

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**3,838,222**

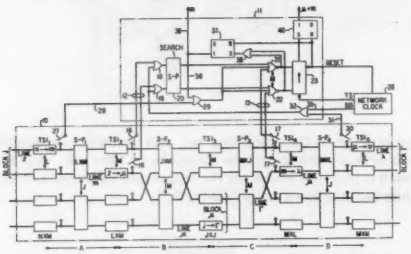
**PATHFINDING LOGIC FOR MULTISTAGE TIME DIVISION MULTIPLEX SWITCHING NETWORK**

**Roy Stephen Krupp, Rumson, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.**

**Filed Mar. 6, 1973, Ser. No. 338,567**

**Int. Cl. H04j** *3/00*

**U.S. Cl. 179—15 AQ** **19 Claims**



Pathfinding logic is described for a time division multiplex switching network of the type which includes alternate stages of time slot interchangers and mass series-parallel converters. Multiple network blocks are included in each stage of the network, and these blocks are cross-connected by grid networks at several different stages in order to provide complete access for each network input highway to any of the network output highways with a relatively low blocking probability. Logic circuits are provided for NORing time slot busy-bit signals of calling block output lines which correspond to called block input lines. The results of the NOR function comprise signals that identify a calling block output line number and time slot number which uniquely define an available time-space path between a calling highway and time slot and a called highway and time slot which are to be placed into communication with one another.

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**3,838,223**

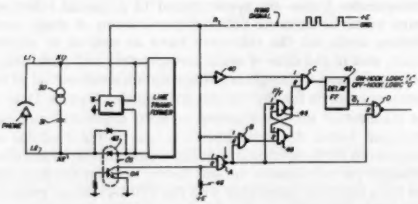
**RING TRIP AND DIAL PULSE DETECTION CIRCUIT**

**David Q. Lee, Chicago, and Donald W. McLaughlin, Bolingbrook, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Oct. 1, 1973, Ser. No. 402,513**

**Int. Cl. H04m** *3/02*

**U.S. Cl. 179—18 FA** **6 Claims**



A ring trip and dial pulse detection circuit for use in a private automatic branch exchange (PABX) of the type wherein a pole change ring circuit controls the polarity of the output to the telephone handset. The dial pulse detector portion of the arrangement is optically coupled to the remaining portion of the arrangement, so that it is electrically isolated to minimize interface problems and circuits to a register or controller.

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**3,838,224**

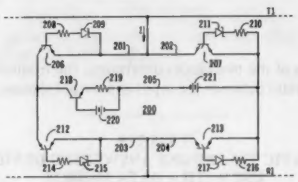
**ELECTRONIC TELEPHONE TRUNK CIRCUIT**

**Lee Wise Richards, 1N231 Woods Ave., Wheaton, Ill. 60187**

**Filed May 17, 1973, Ser. No. 361,188**

**Int. Cl. H04m** *7/00*; **H04q** *1/52*

**U.S. Cl. 179—18 AH** **15 Claims**



A telephone system outgoing trunk circuit comprising a bridge network connected between the tip and ring conductors to present a bilateral direct current path at the same time presenting a high impedance to alternating current. The common crossarm of the bridge network includes a current limiter circuit, to the operating characteristics of which hysteresis is added by including a voltage opposing the voltage biasing the limiter circuit. The two voltages are provided by capacitors connected in the network conducting paths alternately charged by applied current pulses via transformer windings connected through diodes across the capacitors. Supervision, that is, the detection of the direction of direct current through the network, is accomplished by sensing the relative current magnitudes in the transformer primary windings. The trunk circuit provides a high AC impedance and low DC impedance and isolation while eliminating previously required relay contacts and a bulky inductor.

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**3,838,225**

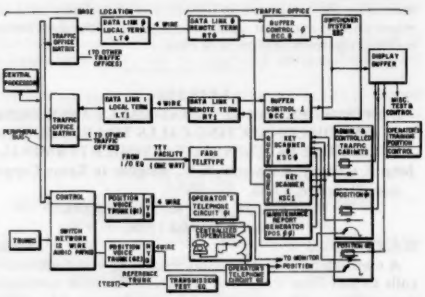
**TSPS KEY SCANNER**

**Anthony Limberg, Potters Bar; William R. Wedmore, Glen Ellyn, and John S. Young, Addison, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Sept. 10, 1973, Ser. No. 395,896**

**Int. Cl. H04q** *11/00*; **H04m** *3/62*

**U.S. Cl. 179—27 FF** **15 Claims**



The keys of telephone toll service positions have contacts to supply a 3-out-of-9 code on a nine-wire bus. The scanner has multiplex circuits to interrogate the position busses sequentially. There are two bistable devices individual to each posi-

tion, and two common bistable devices to remember the status from cycle to cycle so that a key must be closed for two cycles to generate a valid message, and another message is not generated until after the key is opened. For some keys an "indication on release" message is generated when the key is opened, under control of the bistable devices. There are seven buffer registers into which messages are loaded in sequence , and which are unloaded in sequence for transmission to a central processor. A key interpreter checks for three or more bits out of nine, all zeros, all ones indicating an unequipped position, or a code common to keys requiring indication or release.

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**3,838,226**

## AUTOMATIC TELEPHONE EXCHANGE SYSTEM WITH TIME DIVISION MULTIPLEX CONTROL

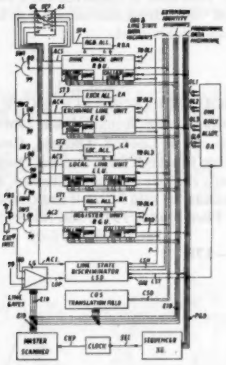
**Bloomfield James Warman, Milan, Italy; John Ford Evans, Pembury, England; Stephen Sidney Walker; John Hugh McPherson, both of Walderslade, England, and Alan Sutton, Dartford, England, assignors to GTE International Incorporated, New York, N.Y.**

**Filed Dec. 21, 1972, Ser. No. 317,312**

**Claims priority, application Great Britain, Mar. 20, 1972, 13031/72**

**Int. Cl. H04q** *1/04*

**U.S. Cl. 179—18 J** **19 Claims**



A data processing system, particularly for use in private automatic branch exchanges, in which a number of functionally different groups of service units, such as register units, local line units and main office trunk units, are connected, by means of TDM operated highways, with each other and with common units such as a master scanner, a line state discriminator, a class-of-service translator and a sequencer. There are switches for providing speech paths between the individual service units and the subscriber lines. Independently therefrom each service unit has at least one store for storing the address of a subscriber line and a comparator for detecting coincidence between a line address generated by the scanner and one contained in the store. The combination of all the stores thus provides a composite memory storing the addresses of all lines served by the exchange and capable of being interrogated by its data processing logic on a time-division-multiplex basis. In this fashion the size of the memory can be directly related to the size of the exchange as determined by the number of individual service units.

**3,838,227**

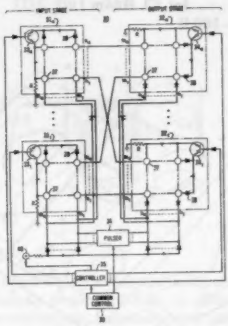
## SWITCHING NETWORK CONTROL CIRCUIT

**Daniel Danielsen, Wheaton, Ill., assignor to Bell Telephone Laboratories, Murray Hill, N.J.**

**Filed June 11, 1973, Ser. No. 368,613**

**Int. Cl. H04m** *3/00*

**U.S. Cl. 179—18 GF** **15 Claims**



In one selection arrangement for a differentially wound ferreed network, a PNPN transistor gate is employed to select particular switches of a network grid. In the past, the gates have been serially enabled to define a pulse path. Here an individual path to ground for selection control currents is provided through a resistor connected in the cathode circuit of the transistor. Enabling of a selected transistor is made independent of a preceding or succeeding transistor in the pulse path and the integrity of said path may be advantageously verified by monitoring the magnitudes of the control and path sensing currents supplied to the selected transistors.

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**3,838,228**

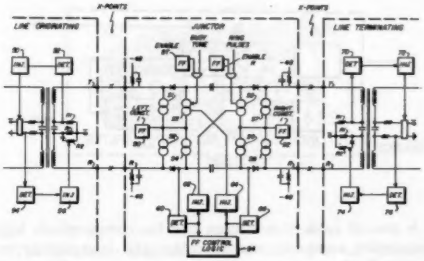
## JUNCTOR DISCONNECT DETECTION CIRCUIT

**David Q. Lee, Chicago, and Donald W. McLaughlin, Bolingbrook, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Oct. 1, 1973, Ser. No. 402,529**

**Int. Cl. H04m** *3/00*

**U.S. Cl. 179—18 H** **6 Claims**



This invention relates to an electronic private automatic branch exchange which is a two wire system using junctors as a means of connecting two line circuits together via a solid state matrix. The system operation is such that the junctor must control the release function, once the final connection is established. This disclosed junctor disconnect detection circuit provides for a dual path release control, as a result of the junctor seeing a disconnect from either line circuit, or a forced release by the systems controller.

**3,838,229**

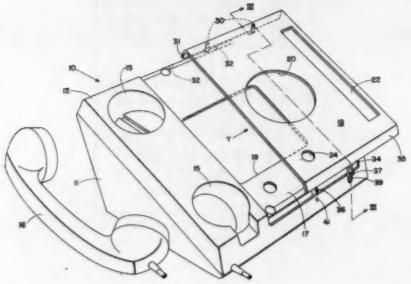
## TELEPHONE SETS AND REMOVABLE COVERS THEREFORE

**Ronald Joseph Morrell; Bev William Gumb; Graham Sterling Laing, and Frederick Thomas Cogan, all of London, Ontario, Canada, assignors to Bell-Northern Research Ltd., Ottawa, Ontario, Canada**

**Filed Apr. 16, 1973, Ser. No. 351,468**

**Int. Cl. H04m** *1/02, 1/23*

**U.S. Cl. 179—100 D** **4 Claims**



A removable cover for a telephone unit, which clips into place and is quickly and easily removed by service personnel. A variety of dial forms and other aperture arrangements can be accommodated merely by changing the cover. The main unit housing can be formed to accept all dial and other variations so that a single unit suffices for all variations. This reduces stock holdings and is more economic. Colour variation is also readily provided.

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**3,838,230**

## COAXIAL CABLE TRANSMISSION LINE

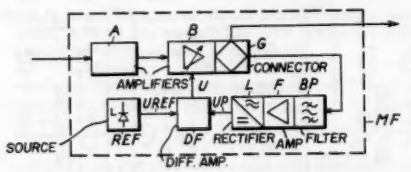
**Knut Goran Bohman, Tyreso, and Andre Dudnik, Bandhagen, both of Sweden, assignors to Telefon aktiebolaget L. M. Ericsson, Stockholm, Sweden**

**Filed Sept. 13, 1972, Ser. No. 288,875**

**Claims priority, application Sweden, Sept. 20, 1971, 11890/71**

**Int. Cl. H04b** *3/58*

**U.S. Cl. 179—170 A** **1 Claim**




A coaxial cable transmission line for comparatively high frequencies comprises coaxial cables and intermediate repeaters. Each repeater consists of two separate amplifier units connected in cascade, one having a linear frequency characteristic with a positive slope by which the linearity coefficient is adjustable. The other unit has an amplification as a function of the frequency consisting of two terms one of which is a constant and the other is increasing proportionally to the square root of the frequency. The value of the constant of proportionality is automatically adjustable by means of a pilot signal to such a value that nominal signal level is achieved at the output of the repeater in case of attenuation variations of the cable connected to the input.

**3,838,231**

## METHOD OF PERFORMING SERVICE PROCEDURES IN A COMPUTER CONTROLLED TELECOMMUNICATION SWITCHING CENTER

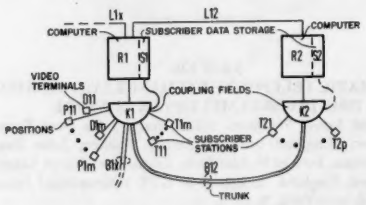
**Robert Fritz, Munich, Werner Simon, Darmstadt, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed Oct. 24, 1972, Ser. No. 300,325**

**Claims priority, application Germany, Oct. 27, 1971, 2153623**

**Int. Cl. H04m** *3/00*

**U.S. Cl. 179—175.2 R** **5 Claims**




A method of operation for a computer controlled telecommunication switching system is described. In particular the method provides a mode of operation by which positions of a testing station are connected. Calls leading to a position of the testing station cause the identity of the calling subscriber station to be ascertained. The call number, so obtained, is used to address and retrieve subscriber test data from a subscriber data storage. This data is displayed on a video data terminal associated with the testing station position to which the aforementioned call is connected.

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**3,838,232**

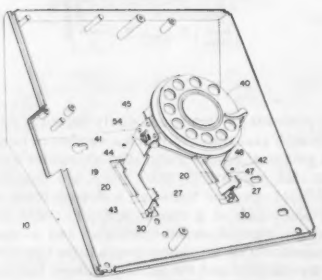
## MOUNTING FOR TELEPHONE DIALS

**Graham Sterling Laing; Ronald Joseh Morrell, and Bev William Gumb, all of London, Ontario, Canada, assignors to Bell-Northern Research Ltd., Ottawa, Ontario, by said Laing and Northern Electric Company Limited, Montreal, Quebec, both of, Canada, by said Morrell and Gumb**

**Filed May 9, 1973, Ser. No. 358,494**

**Int. Cl. H04m** *1/02*

**U.S. Cl. 179—178** **7 Claims**



A telephone dial is quickly and easily mounted in a housing by brackets which clip into supports forming part of the housing. The brackets are assembled to the dial before mounting — permitting easier assembly and closer positioning of items in the housing. The dial is readily removed for servicing or replacement. As a further feature the brackets form an opposed pair and by changing over assembly positions, dials of different widths can be accommodated.

3,838,233

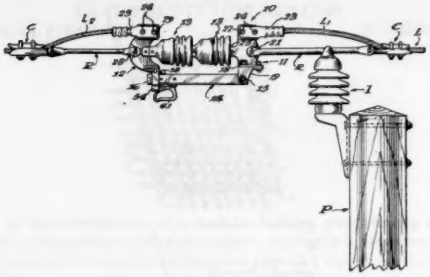
## ELECTRIC CIRCUIT DISCONNECT MEANS FOR A POWER TRANSMISSION LINE

Ronald P. Bridges, c/o Bridge Electric, Inc., 2451 Wisconsin St., Downers Grove, Ill. 60515

Continuation of Ser. No. 282,180, Aug. 21, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,338

Int. Cl. H01h 31/00

U.S. Cl. 200—48 R 7 Claims



An electric circuit disconnect switch for a power transmission line has a series of cap and pin strain insulators threadedly connected to one another, and threadedly connected to the ends of the series are an electrically conductive hinge terminal bracket and an electrically conductive jaw terminal bracket, each of which is adapted to be electrically connected into a power transmission line. A bridging blade is pivoted on the hinge terminal bracket for separable connection with the jaw terminal bracket.

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3,838,234

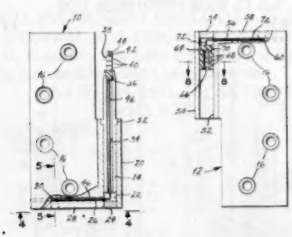
## HINGE THROUGH WHICH AN ELECTRICAL CIRCUIT IS COMPLETED WITH MEANS TO INTERRUPT THE CIRCUIT

Francis C. Peterson, Affton, Md., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed July 2, 1973, Ser. No. 375,788

Int. Cl. H01h 3/16

U.S. Cl. 200—61.7 16 Claims



A hinge has leaves provided with aligned knuckles through which a hinge pin extends. The pin is anchored to the knuckle of one of the leaves and carries a dielectric contact spindle on which slip rings are mounted. The knuckle of the other leaf has a dielectric receptacle provided with contact blades which engage the slip rings. The engaged contact blades and slip rings complete electrical circuits through the hinge, but do not interfere with disassembly of the hinge. One slip ring is split so that the circuit through it is interrupted when the hinge reaches a prescribed position. Wires extend from the slip rings and contact blades through the hinge knuckles and also through grooves milled into the end edges of the leaves, and are thereby completely concealed.

3,838,235

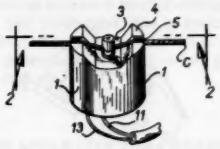
## CABLE TENSION RESPONSIVE SWITCH

Jean St. Germain, St. John, Quebec, Canada, assignor to Andre H. Baron, East Montreal, Canada

Filed Apr. 16, 1973, Ser. No. 351,533

Int. Cl. B65h 25/14, 25/22

U.S. Cl. 200—61.18 4 Claims



An electrical switch which is responsive to cable tensioning. The switch is directly suspended from a cable, such as the brake cable of a motorcycle, snowmobile or other vehicle. A plunger is hooked to the cable between two portions of the switch housing abutting the cable; a spring urges the plunger to kink the cable when tension is released; tensioning of the cables moves the plunger out of its normal position, thereby operating the electrical contact associated with the plunger. The electrical switch not only eliminates securing the switch housing to a fixed part but also does not require any further adjustment when the brake is adjusted.

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3,838,236

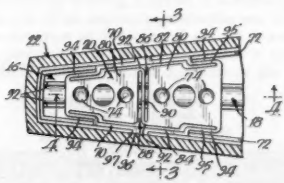
## ACTUATING MEANS FOR WARNING DEVICES

Walter A. Wolf; Wallace A. Gebhardt, and Prentice R. Corn, all of Logansport, Ind., assignors to Switches Incorporated, Logansport, Ind.

Filed May 23, 1973, Ser. No. 363,084

Int. Cl. H01h 9/00

U.S. Cl. 200—61.56 9 Claims

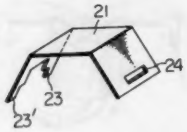


The invention disclosed herein relates to an actuating means for a warning device such as a horn for an automobile. The actuating means includes an actuator that is supported at opposite sides on a base and overlying an elongated recess which supports a switch consisting of first and second elongated strips that are electrically insulated from each other by a resilient non-conductive member. The actuator has a plurality of longitudinally spaced projections extending towards the switch and slits dividing the actuator into a plurality of flaps so that application of a force to any point on the flaps will cause deflection of the actuator to produce engagement between the elongated strips.

## 3,838,237
## LIGHT LOAD TYPE PUSH BUTTON SWITCH

Hideoki Hoshioka, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 26, 1973, Ser. No. 354,699
Claims priority, application Japan, Apr. 28, 1972, 47-50407; June 22, 1972, 47-74213
Int. Cl. H01h 13/36
U.S. Cl. 200—67 DA 5 Claims

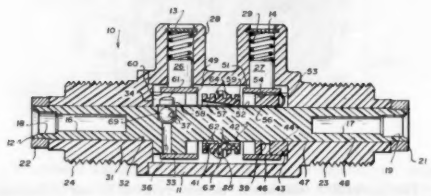



A light load type push-button switch comprises an actuator inserted at one end of movable-contact fixing section between fixed contacts opposing each other as secured to a housing and engaged at the other end of push-button contacting section to a push-button, said push-button contacting section having a spring section extending therefrom toward the movable contact fixing section, a supporting metal member as a common terminal and fixed to the housing so as to substantially transverse the actuator at a substantially intermediate position thereof, said spring section of the actuator being fixed to the supporting metal member at the free end of the movable-contact fixing section side, and a turning spring member, or toggle spring, engaged to the actuator for biasing the push-button contacting section thereof toward the push button.

## 3,838,238
## CENTRIFUGAL SWITCH

Bayne B. Tomlinson, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 17, 1973, Ser. No. 398,261
Int. Cl. H01h 35/10
U.S. Cl. 200—80 B 12 Claims

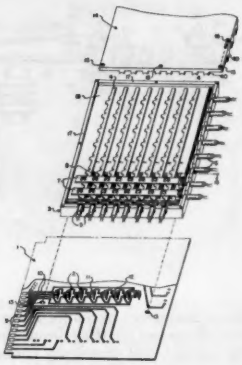


A centrifugal switch including a normally open embodiment and a normally closed embodiment; in either embodiment weighted portions of a spring or inertia members may be used for selecting a speed range in which the switch becomes operative. Either embodiment includes an elongated spring wherein the effective length of the spring is subject to adjustment for more precisely selecting the rotational speed at which the switch becomes operative.

## 3,838,239
## MATRIX SWITCH WITH IMPROVED ACTUATOR TRANSLATING ARRANGEMENT

John Maruscak, and George McRae Hendry, both of Brockville, Ontario, Canada, assignors to GTE Automatic Laboratories Incorporated, Northlake, Ill.

Filed July 18, 1973, Ser. No. 380,430
Int. Cl. H01h 63/33
U.S. Cl. 200—175 5 Claims

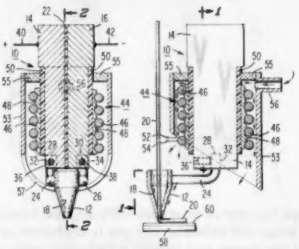


An open contact matrix is disclosed having a printed wiring card as one of the basic elements thereof; the printed wiring card includes a plurality of fixed contacts and a corresponding plurality of movable contacts extending from the wiring card. A frame is provided for supporting an array of operating members, which are solenoid driven, for selectively moving an actuator above predetermined sets of movable contacts to close them on to their corresponding fixed contacts.

## 3,838,240
## BONDING TOOL AND METHOD OF BONDING THEREWITH

Robert Lindsey Schelhorn, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,674
Int. Cl. B23k 19/00; H05b 1/00
U.S. Cl. 219—85 11 Claims



A thermocompression bonding tool is heated by a combination of conductive and resistive heating means. Firstly, a bonding tip of the tool is heated by conduction with heat provided by a heating coil disposed around electrodes that are adapted to conduct electric current to the bonding tip. Secondly, the bonding tip is heated resistively by current supplied to it through the electrodes. A non-oxidizing inert gas is heated by being passed over the heating coil and is directed onto the bonding tip to prevent oxidation of the bonding tip. The

heated gas is also directed onto any workpiece brought adjacent to the bonding tip for bonding thereby, whereby to heat the bonding site so that a cold workpiece need not be preheated before being thermocompression bonded.

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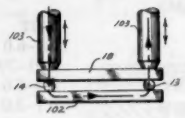
**3,838,241**
**MATRIX FABRICATION**
**Victor P. Weismann, 430 Prospect Cir., South Pasadena, Calif. 91030**
**Filed Mar. 22, 1972, Ser. No. 236,875**
**Int. Cl. B23k** *9/12, 11/30;* **B21f** *15/08*
**U.S. Cl. 219—56** **23 Claims**




In the manufacture of a modular building panel having a three-dimensional welded wire matrix, the matrix is comprised of a plurality of essentially identical truss-like matrix subunits which are assembled in a machine which includes means for periodically adjusting for the adverse effects of tolerance accumulation so that the matrix subunits may be fabricated in an essentially continuous array in which each subunit has a length within predetermined tolerance limits. A plurality of strips of prefabricated truss units are introduced in synchronism into a matrix fabrication unit which is insensitive to the particular machine upon which matrix subunits were fabricated. In the matrix fabrication machine, a welding station is provided for each subunit of the matrix and includes coaxially aligned first and second electrodes movable toward and away from each other along their common axis, and a central electrode. The central electrode has a welding position in which the central electrode intersects the common axis of the adjacent first and second electrodes to serve as a conductive anvil for the first and second electrodes. The central electrode at each station also has a retracted position spaced from the common axis of the adjacent first and second electrodes to accommodate movement of material to be welded, including the aforesaid matrix subunits, into place between the first and second electrodes.

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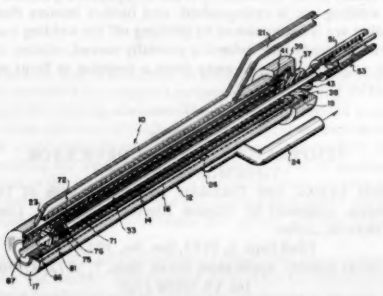
**3,838,242**
**SURGICAL INSTRUMENT EMPLOYING ELECTRICALLY NEUTRAL, D.C. INDUCED COLD PLASMA**
**Robert G. Goucher, Salt Lake City, Utah, assignor to Hogle-Kearns International, Salt Lake City, Utah**
**Filed May 25, 1972, Ser. No. 256,714**
**Int. Cl. B23k** *9/04*
**U.S. Cl. 219—121 P** **11 Claims**



A surgical instrument (plasma scalpel) generates an electric field plasma in a carrier gas for cutting and/or cauterizing tissue. The instrument includes a tubular conductor for carrying both current and gas to an anode. The gas flows from the tubular conductor, around the surface of an anode, and thence through an annular cathode. The electric field between the anode and cathode excites the gas to a plasma state, and the excited gas then flows in a directed stream through the cathode and out the end of the instrument. The tubular conductor is surrounded by a cooling jacket which concomitantly serves as an electrical conductor to the cathode. A dielectric sheath may be provided over the cooling jacket. This sheath may be overlaid with a conductive skin connected to earth ground to prevent an excessive electric charge from accumulating thereon. The conductive skin is preferably grounded through a circuit breaking device to cut off all power to the instrument if the potential of the skin differs greatly from the potential of the cathode.

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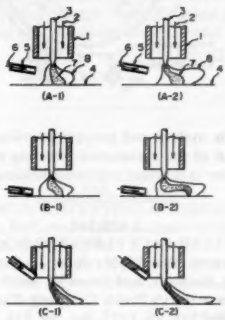
**3,838,243**
**METHOD AND APPARATUS FOR CONTROLLING ARC IN GAS SHIELD ARC WELDING**
**Michio Inagaki, and Akira Okada, both of Tokyo, Japan, assignors to National Research Institute for Metals, Tokyo, Japan**
**Filed Dec. 29, 1972, Ser. No. 319,732**
**Int. Cl. B23k** *9/00*
**U.S. Cl. 219—122** **10 Claims**




In a gas shield arc welding, a stream of a control gas is blown against the end of an electrode generating arc to deflect the arc in the direction of the control gas jet stream. An arc-generating position of a joint to be welded is controlled by changing the momentum and/or direction of the control gas jet stream.

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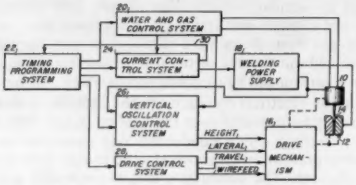
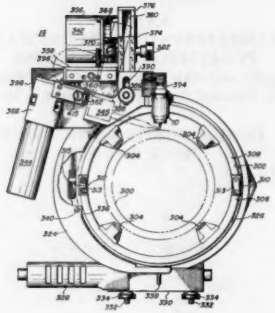
**3,838,244**
**ELECTRICAL SYSTEM FOR AUTOMATIC ARC WELDING**
**Petros T. Petrides, Stonington; Russell J. Nickerson, Mystic; Rodney R. Cordeiro, Stonington, all of Conn., and James S. Dodson, Jr., East Freedom, Pa., assignors to General Dynamics Corporation, New York, N.Y.**
**Continuation of Ser. No. 804,724, Oct. 29, 1968, abandoned.**
**This application Apr. 22, 1971, Ser. No. 136,503**
**Int. Cl. B23k** *9/10*
**U.S. Cl. 219—131 F** **5 Claims**

A process and system for welding of the tungsten inert gas (TIG) type is described. A welding torch is mounted on a mechanism which provides for motion of the torch with respect to the work (a pipe being welded) in three different directions. Movement in each direction is electronically controlled so as to obtain preset magnitudes of oscillation of the torch, both vertically and laterally with respect to the work.

The vertical oscillation is provided by following the pulsating arc current in accordance with a preselected control function.



In addition, the system and process provides for control of substantially all of the parameters affecting the formation of the weld in order to produce improved weldments.

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**3,838,245**

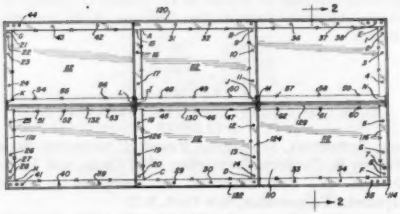
**FLUSH-FACE ELEVATOR DOOR**

**James M. Jecmen, Brookfield; John J. Jecmen, Riverside; Robert Riley, Burbank, and James W. Smith, Hinsdale, all of Ill., assignors to Harris Preble Company, Cicero, Ill.**

**Filed Dec. 18, 1972, Ser. No. 316,261**

**Int. Cl. B23k** *9/00*

**U.S. Cl. 219—137** **9 Claims**



A flush-face freight elevator door is produced by welding a face plate, at least about 0.090 inches thick, to the members of a frame in the disclosed order, thereby producing a door substantially free of distortion or "oil-canning."

**3,838,246**

**FLUX-CORED ELECTRODE**

**Arkady Efimovich Asnis, Bulvar Lesi Ukrainki, 2, kv. 5; Yury Yakovelevich Gretsky, ulitsa Semashko, 21, kv. 116, and Vladislav Alexandrovich Metlitsky, ulitsa Khorevaya, 31, kv. 6, all of Kiev, U.S.S.R.**

**Filed Sept. 8, 1972, Ser. No. 287,360**

**Int. Cl. B23k** *35/22*

**U.S. Cl. 219—146** **2 Claims**

A flux-cored electrode for welding and surfacing cast iron, with a steel casing filled with a pulverized charge or mixture amounting to 65–80 percent by weight of total electrode weight of the following composition (percent by weight of the total electrode weight):

| | |
|---|---|
| graphite | 5–12 |
| ferrosilicon | 0.1–6.0 |
| iron powder | 0.01–20.00 |
| complex modifier | 0.5–6.0 |
| flux-forming agent | 0.1–3.0 |

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**3,838,247**

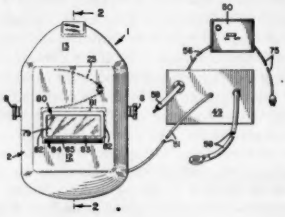
**WELDING HELMET**

**John F. Finger; William C. Jackson, and Merle E. Pochop, all of Beresford, S. Dak., assignors to Sioux Steam Cleaner Corporation, Beresford, S. Dak.**

**Filed Mar. 25, 1974, Ser. No. 454,218**

**Int. Cl. B23k** *37/00*

**U.S. Cl. 219—146** **11 Claims**



A light reducing viewing shield, or dark glass, mounted in the hood of a welding helmet for movements toward and away from an operative position in register with a viewing opening in the hood. Mechanism in the hood is operative to move the shield between its operative and inoperative positions responsive to movement of a welding electrode respectively into and out of welding engagement with a workpiece. Control circuitry including a time-delay mechanism insures against the movement of the shield away from its operative position until the welding arc is extinguished; and further insures that the welding arc is extinguished by shutting off the welding current when the hood of the helmet is pivotally moved, relative to the head-engaging harness, away from a position in front of the operator's eyes.

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**3,838,248**

**TEMPERATURE CONTROL DEVICE FOR THERMOSTATIC OVEN**

**Hisashi Uchida, and Takeshige Hamatsuki, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan**

**Filed Sept. 6, 1973, Ser. No. 394,873**

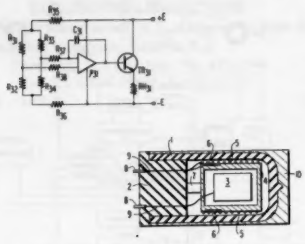
**Claims priority, application Japan, Sept. 7, 1972, 47-90212**

**Int. Cl. H05b** *1/00*

**U.S. Cl. 219—210** **3 Claims**

A temperature control device for a thermostatic oven or the like is provided with an input temperature-sensitive, resistive

bridge network. Any imbalance voltage in the bride network is integrated by an electronic integrator to provide an output intergrated voltage. The output integrated voltage is amplified by a power amplifier which supplies the heater element in the



oven. The effect of the arrangement is such as to minimize the offset voltage in the feedback loop with the result that changes in the ambient temperature and power supply voltage have less effect on the operation of the device.

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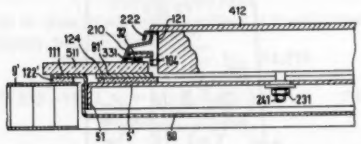
**3,838,249**

## COOKING TRAY

**Heinrich Detterbeck, Traunreut, Germany, assignor to Siemens-Electrogerate GMBH, Berlin and Munich, Germany**

**Filed Apr. 21, 1972, Ser. No. 246,243**
**Int. Cl. H05b** *3/68*
**U.S. Cl. 219—460** **10 Claims**



A cooking tray is disclosed in which a carrier of tempered glass is mounted on a support surface between the support surface and the heating element. The carrier is insulated to protect it from the heat of the heating element by thermal sealing means comprising in one embodiment an intermediate ring surrounding the heating element having a layer of insulation attached to the intermediate ring. Moisture seals are also provided between the carrier and the heating element to prevent moisture from entering between the carrier and the heating element.

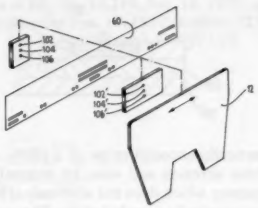
Various alternative embodiments illustrating the concept of utilizing the carrier of tempered glass with an intermediate ring, heat insulation and moisture sealing means to permit the combination of various heating elements with a carrier of tempered glass are disclosed.

**3,838,250**

## CONTROL FOR A MATRIX PRINTING ASSEMBLY

**Hartley M. Naas, Concord; Julian C. Sutherland, and Dale D. Nesbitt, both of Berkeley, all of Calif., assignors to The Singer Company, New York, N.Y.**

**Filed Jan. 5, 1973, Ser. No. 321,177**
**Int. Cl. B41j** *21/18*
**U.S. Cl. 235—61.9 R** **15 Claims**



A control for a matrix printing assembly to determine the character and spacing thereof in a data terminal comprising the combination of a mechanical linear strobe and an electronic timing circuit accurately controlling and positioning the stroke of each rod or stylus of the matrix printer.

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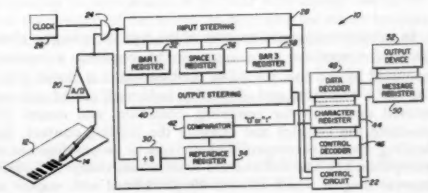
**3,838,251**

## METHOD OF INTERPRETING A CODED RECORD

**Carlos B. Herrin, Bellbrook, Ohio, assignor to Monarch Marking Systems Inc., Dayton, Ohio**

**Filed June 29, 1971, Ser. No. 157,870**
**Int. Cl. G06k** *7/14, 19/06, 9/10;* **G01n** *21/30*
**U.S. Cl. 235—61.11 E** **8 Claims**



A machine readable, binary coded record or label includes alternating bars and spaces of different reflectivity in which the widths of the bars and spaces are assigned one of two values representing a binary "1" or a binary "0." The widths of the bars and spaces forming a complete code are individually determined, and the average width of these same bars and spaces is also determined. This average width is then compared with the actual widths of the individual bars and spaces to determine the "1" and "0" significance of the bars and spaces. In this manner, the establishment of a virtual reference width formed by the averaging of the individual bar and space widths renders record interpretation substantially independent of reading speed or apparent bar and space width.

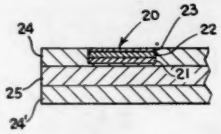
## 3,838,252
## PROTECTIVE COATINGS FOR MAGNETICALLY CODABLE CREDIT CARD

**John E. Hynes, Danbury, and Joseph F. Braca, Huntington, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.**

**Continuation-in-part of Ser. No. 16,118, July 9, 1971, Pat. No. 3,626,214. This application Feb. 22, 1972, Ser. No. 227,960**

**Int. Cl. G06k** *19/06*

**U.S. Cl. 235—61.12 M** **6 Claims**




The magnetically encoded stripe of a plastic credit card is protected from abrasion and wear by precisely coating the stripe in a manner which does not adversely affect the readability of the magnetically encoded stripe. The coating is a vinyl polymer such as polyvinylchloride applied in a thickness of about 0.1 mills. The polymer is suspended or dissolved in a carrier liquid which is a substantial non-solvent for the material of the magnetic stripe on which it is applied. The magnetic stripe is pre-coated and then applied to the credit card.

## 3,838,253
## ELECTROMAGNETIC COUNTER

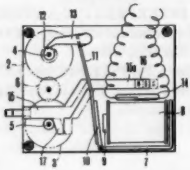
**Noriyoshi Sanada, Urawa City, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan**

**Filed June 14, 1972, Ser. No. 262,481**

**Claims priority, application Japan, June 29, 1971, 46-55860**

**Int. Cl. H03k** *23/03*

**U.S. Cl. 235—92 C** **1 Claim**



In an electromagnetic counter of the type including an electric coil responsive to a signal to be counted, a counter operated by the coil, a holding contact which is closed when the coil is energized and adapted to hold itself closed and any related circuit in the operating condition, and means for resetting the counter and opening the holding contact, the holding contact is comprised by a magnetic switch disposed to be operated by the coil and the reset means comprises a permanent magnet which is normally positioned with respect to the magnetic switch such that the magnetic flux generated by the permanent magnet is not sufficient to close the magnetic switch but sufficient to hold the magnetic switch in the closed state once it has been closed by the coil.

## 3,838,254
## EXTENSOMETER WITH UPDATING AT INTERVALS INDEPENDENT OF STRIP SPEED

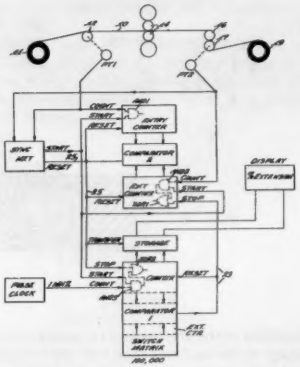
**Allan C. Halter, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.**

**Filed Sept. 27, 1972, Ser. No. 292,793**

**Int. Cl. B21c** *51/00*

**U.S. Cl. 235—92 DN** **15 Claims**

A steel strip engages entry and exit rolls in passing through a rolling mill, pulses from entry and exit pulse tachometers driven by the entry and exit rolls are accumulated in entry and exit counters respectively, and the amount of extension of the strip is determined by repeatedly accumulating in a presettable extension measuring counter the pulses from a pulse clock, stopping the exit counter and resetting the extension measuring counter to zero after the preset number of pulses have been accumulated, continuing to accumulate pulses in the entry and extension measuring counters, and upon coincidence of counts stored in the entry and exit counters, reading out the number of clock pulses accumulated in the extension measuring counter in the period between stopping of the exit counter and coincidence of counts in the entry and exit counters as an indication of the percent extension of the strip.



## 3,838,255
## APPARATUS FOR COUNTING A STACK OF SHEETS

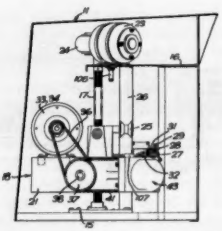
**Gordon Stanley Dutton, Harwich, England, assignor to Vacuumatic Limited, Harwick, England**

**Filed Nov. 19, 1973, Ser. No. 417,123**

**Claims priority, application Great Britain, Nov. 24, 1972, 54393/72**

**Int. Cl. G06m** *9/00*

**U.S. Cl. 235—92 SB** **10 Claims**



There is disclosed an apparatus, for counting a stack of sheets, of the kind (hereinafter referred to as "the kind described") comprising a counting head which in use is traversed along a corner of the stack, the head having a suction blade provided with a suction orifice for insertion in the corner of the stack, which blade is oscillatable about a horizontal axis to separate a corner of a sheet in the stack adhered by suction to one side of the blade from the next sheet, and a wiping pin movable in an elongate orbit around the blade to transfer the corner of the sheet from the said one side of the blade to the opposite side thereof, and means to count the number of transfer operations effected, wherein there are provided means for positively precluding further operation of the apparatus when a predetermined number of sheets has

been counted, which means comprise an interrupting blade movable between an inoperative position, and an operative position in which the interrupting blade covers the suction orifice in the suction blade to prevent the blade adhering to another sheet.

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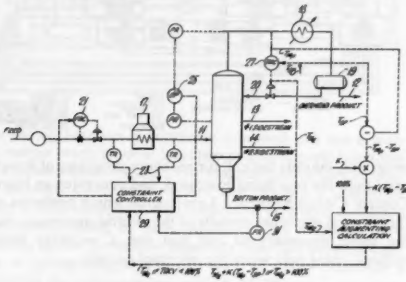
**3,838,256**

## CONSTRAINT CONTROL FOR PROCESSES WITH EQUIPMENT LIMITATIONS

**Henry A. Mosler, Morristown, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.**

**Filed Dec. 3, 1973, Ser. No. 421,034**
**Int. Cl. G06f *15/46*; G05d *21/02***
**U.S. Cl. 235—150.1** **2 Claims**




In a constraint control system which automatically optimizes the performance of a process unit by continuously scanning important operating variables, measuring the deviation of those variables from their preselected target values, identifying the instant limiting variable, and adjusting a predetermined manipulated variable to bring the limiting variable to its target value, when one of the operating variables exceeds its target value and is an equipment limitation, the error signal is augmented to indicate the true extent of the deviation which must be corrected in order to bring that variable back to its target value.

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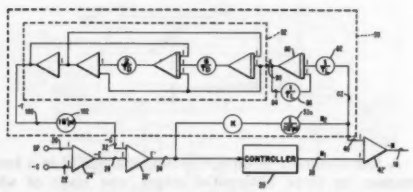
**3,838,257**

## CONTROL SYSTEM FOR MINIMIZING BOTH THE CONTROL ERROR AND THE INTEGRAL OF THE CONTROL ERROR

**Charles W. Ross, Hatboro, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.**

**Filed Nov. 6, 1972, Ser. No. 304,029**
**Int. Cl. G05b *11/42***
**U.S. Cl. 235—151.1** **7 Claims**




A standard feedback control system is supplemented by a modification of the manipulated variable in proportion to the product of the error and the reciprocal of the absolute value of the process gain. That supplementary control, which minimizes the integral of the control error in a minimum time, is prevented from affecting the feedback control response by a modification of the error so that changes in the controlled variable resulting from the supplementary control will not affect the effective error input to the feedback controller. This compensation of the error is produced by using a process model responsive to the supplementary control for modifying the error signal.

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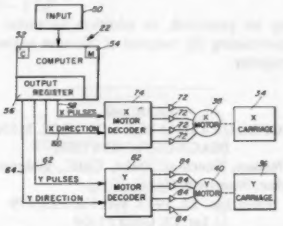
**3,838,258**

## STEP MOTOR CONTROL SYSTEM

**David J. Logan, Glastonbury, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.**

**Continuation of Ser. No. 10,216, Feb. 10, 1970, abandoned.**
**This application Feb. 18, 1972, Ser. No. 227,686**
**Int. Cl. G05b *19/40*; G06f *15/46***
**U.S. Cl. 235—151.11** **9 Claims**




A control system for a step motor includes a computer which controls the energization of the step motor in response to input information supplied thereto. The step motor is connected directly to the output register of the computer so that the computer has complete control of each increment of motion of the step motor, the motor increments being produced by the computer program without the aid of an external clock or feedback signals from the step motor or the part driven thereby. In order to match the stepping rate of the step motor to the higher rate at which the computer is able to generate incremental motion producing changes in the output word appearing in the output register, the computer program includes at least one wait loop which is performed following each change in the output word to provide a predetermined delay preceding the appearance of the next word change and to control the velocity of the motor. In operating the motor between two end points wait loops of different duration may be used during the starting and stopping phases in order to match the acceleration and deceleration loads imposed on the motor to its available torque at various different speeds.

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**3,838,259**

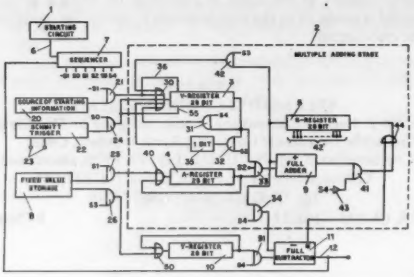
## CIRCUIT ARRANGEMENT FOR GENERATING PSEUDO RANDOM NUMBERS

**Dieter Kortenhaus, Bingen, Germany, assignor to NSM Apparatebau GmbH Kommanditgesellschaft, Bingen/Rhine, Germany**

**Filed Apr. 5, 1973, Ser. No. 348,221**
**Claims priority, application Germany, Apr. 7, 1972, 2216633**
**Int. Cl. G06f *7/00***
**U.S. Cl. 235—152** **11 Claims**

A circuit for generating pseudo random numbers includes an adder stage having a multiplier connected for serial bit multiple addition. The adder stage is controlled by a sequence switch. The adder stage includes a first register connected to receive a preceding random number, a second register having a constant number, means connected for the serial addition of the outputs of the first and second registers, and a sum register connected to receive the results of the multiple addition. The

output of the sum register is connected to the input of the first register under control of the sequence switch. An additional



register may be provided, in addition to serial subtractor means for combining the outputs of the sum register and the additional register.

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**3,838,260**

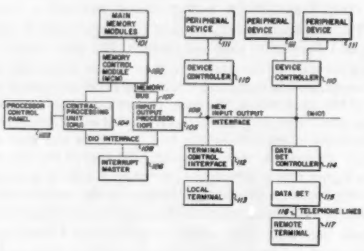
## MICROPROGRAMMABLE CONTROL MEMORY DIAGNOSTIC SYSTEM

**Frank M. Nelson, Sherman Oaks, Calif., assignor to Xerox Corporation, Stamford, Conn.**

**Filed Jan. 22, 1973, Ser. No. 325,479**

**Int. Cl. G06f** *11/04*

**U.S. Cl. 235—153 AK** **10 Claims**



Periodically operating test microprograms and fault detection circuits for a data processing system containing a microprogrammable control memory are disclosed. Said fault detection is performed concurrently with normal data processing in a time-shared fashion. Also disclosed are means for storing fault information and the status of said system at the time of fault detection, and a terminal coupled to the system by communication lines for enabling the execution of software diagnostics and the read out of all stored fault information.

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**3,838,261**

## INTERRUPT CONTROL CIRCUIT FOR CENTRAL PROCESSOR OF DIGITAL COMMUNICATION SYSTEM

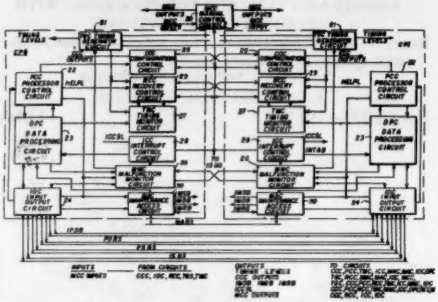
**Verner K. Rice, Wheaton; John J. Mele, Chicago, and Rolfe E. Buhrke, La Grange Park, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Sept. 14, 1973, Ser. No. 397,458**

**Int. Cl. H04m** *3/24, 3/10;* **G06f** *15/16*

**U.S. Cl. 235—153 AE** **8 Claims**

The control and maintenance complex of a TSPS telephone system is provided with duplicate copies of a programmable central data processor, instruction storage, process storage and peripheral units which interface with the telephone network. When a fault is detected, the system enters a recovery phase to try to obtain a fault-free combination. Recovery programs have priority over call processing programs. An interrupt control circuit (ICC) is present in each central processor; and the ICC in the active central processor, upon fault detection by the central processor, controls the execution of maintenance interrupts. The ICC establishes priority of recovery



programs, inhibits the call for recovery programs of lesser priority than the one being executed, and generates an Interrupt Control Circuit Sequence Level signal which performs many functions in the other circuits of the central processor, including those necessary to call and run a recovery program without losing data when the interrupt occurs.

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**3,838,262**

## FOUR-QUADRANT MULTIPLIER CIRCUIT

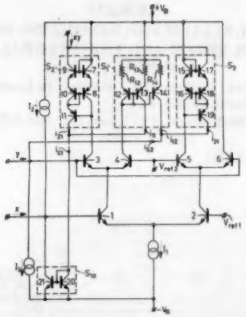
**Rudy Johan van de Plassche, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed July 25, 1973, Ser. No. 382,591**

**Claims priority, application Netherlands, Aug. 3, 1972, 7210633**

**Int. Cl. G06g** *7/16*

**U.S. Cl. 235—194** **11 Claims**

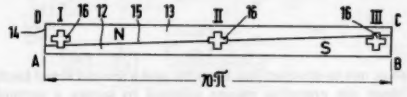


A four-quadrant multiplier circuit, constituted in a known manner by three differential stages, one stage of which receives the x-signal and supplies the current for the two other stages, which receive the y-signal in parallel. From the output currents of these two last-mentioned differential stages such sum currents are formed with the aid of multiple current mirrors that these currents are suitable to be applied to the two inputs of the circuit as negative-feedback currents. By also applying the input signals as currents an effective negative feedback system is obtained.

## 3,838,263
## ANALOG FUNCTION GENERATOR WITH MAGNETIC CARRIER

**Jochen Haeusler, Nurnberg-Laufamholz; Wolfgang Wagnerberger, and Michael Appiah, both of Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany**

**Filed Nov. 22, 1972, Ser. No. 308,779**
**Claims priority, application Germany, Nov. 22, 1971, 2157801**
**Int. Cl. G06g** *7/26*
**U.S. Cl. 235—197** **5 Claims**

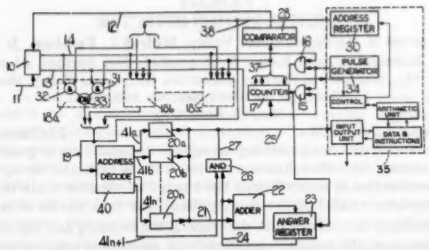



An analog function generator is disclosed and has a magnetic carrier made up of at least two magnetic parts extending over a predetermined range. The magnetic parts have respective, mutually opposing polarities and develop a composite magnetic field composed of component magnetic induction fields corresponding to these polarities. The magnetic parts conjointly define a common boundary interface between each other. A galvanomagnetic device such as a Hall generator is disposed in the composite magnetic field. The magnetic carrier and the galvanomagnetic device are mounted so as to effect a relative motion with respect to each other and the interface is inclined with respect to the direction of this motion; this causes the component magnetic fields to act upon the galvanomagnetic device in respective varying intensities as the device and the carrier move relative to each other in the direction of the relative motion whereby the device provides an output signal having a polarity and magnitude dependent upon the position of the device with respect to the carrier.

## 3,838,264
## APPARATUS FOR, AND METHOD OF, CHECKING THE CONTENTS OF A COMPUTER STORE

**Paul Manwaring Maker, 429 Brook Ln., Birmingham, England**

**Continuation-in-part of Ser. No. 201,554, Nov. 23, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,503**
**Claims priority, application Great Britain, Nov. 25, 1970, 56017/70**
**Int. Cl. G11c** *29/00*
**U.S. Cl. 235—153 AM** **10 Claims**

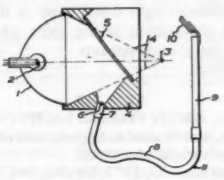



An apparatus for checking the contents of a store of a computer which is normally under control of a train of timing pulses, and in which the store is normally controlled by an address register in the computer, comprises a switching arrangement responsive to a command signal to remove the pulses from the remainder of the computer then automatically being returned to control of the pulses and the sum being retained for comparison with a known quantity.

## 3,838,265
## APPARATUSES FOR ILLUMINATING AN OPERATING ZONE WHICH IS OBSERVED BY MEANS OF AN OBSERVATION MIRROR

**Ake Persson, Sollentuna, and Folke Hedstrom, Stockholm, both of Sweden, assignors to SWE-PE-DENT AB, Handelsvagen, Danderyd, Sweden**

**No Drawing. Filed Nov. 9, 1973, Ser. No. 414,391**
**Claims priority, application Sweden, Nov. 17, 1972, 15037/72**
**Int. Cl. F21**
**U.S. Cl. 240—1 LP** **4 Claims**



An apparatus for illuminating an operating zone which is observed by means of an observation mirror of the type having a stem, includes a light-generating device from which the light is transmitted to the operating zone over a light conductor and reflecting means separate from the observation mirror. The light-generating means comprises a light source which is positioned in one focal point of a cold-light reflector which is part of an ellipsoid. A planar cold-light mirror is provided between said focal point and the other focal point of the ellipsoid and makes an angle with the axis of the ellipsoid such that the visible light is reflected toward a secondary focal point positioned outside the maximum focusing cone of the reflector, one end of the light conductor being disposed at the secondary focal point. The other end of the light conductor cooperates with the reflecting means the surface of which makes an angle with the longitudinal direction of the stem of the observation mirror such that the light coming from the reflecting means strikes the operating zone. The latter angle is so selected in relation to the angle of the observation mirror to the longitudinal direction of the stem that the operating area becomes visible in the observation mirror.

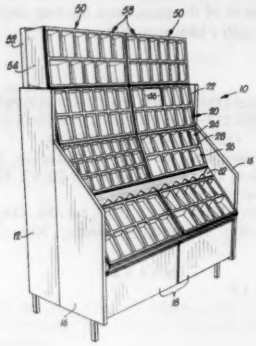
## 3,838,266
## ILLUMINATED PRODUCT DISPLAY FIXTURE

**Isaac Jonathan, Kansas City, Mo., assignor to Hallmark Cards, Incorporated, Kansas City, Mo.**

**Filed May 17, 1973, Ser. No. 361,141**
**Int. Cl. F21v** *33/00*
**U.S. Cl. 240—2 AD** **20 Claims**

An illuminated product display fixture provided with a housing having an upright opening therein for receiving a plurality of removable, preformed, interchangeable, translucent, tray-like synthetic resin modules each having a series of article receiving pockets or niches therein. Articles displayed in individual pockets are illuminated around the entire perimeter thereof by provision of an elongated light source in the housing loacted between the modules and a paraboloidal reflector which serves to assure relatively uniform light distribution

through the side walls of each pocket. Preferably, opaque, rearwardly facing reflectorized material on the back wall of



each pocket enhances light distribution in the housing and prevents visual observation of hot spots when articles are deflected from one or more pockets.

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**3,838,267**

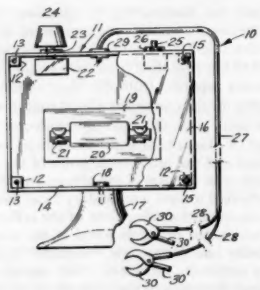
**NIGHT FISHING LIGHT**

**Larry A. Eggers, and Walter A. Eggers, both of 1330 E. Atlantic, both of Springfield, Mo. 65803**

**Filed Mar. 23, 1973, Ser. No. 344,134**

**Int. Cl. F21v** *33/00*; **B60g** *1/26*; **F21l** *7/00*

**U.S. Cl. 240—6.4 F** **1 Claim**



A light for night fishing, consisting primarily of a suction cup mounted on a plastic box having a removable lens secured to the open end from which light is emitted from a snapably releasable bulb, the device including a brightness control, an on and off switch, and insulated battery clips for securement to the boat's power supply or to an automobile battery.

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**3,838,268**

**FLUORESCENT FIXTURE**

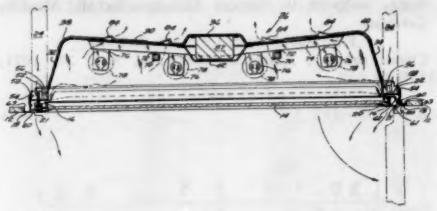
**William C. Fabbri, Billerica, Mass., assignor to Keene Corporation, New York, N.Y.**

**Filed Aug. 29, 1973, Ser. No. 392,805**

**Int. Cl. F21v** *33/50*; **F24f** *13/02*

**U.S. Cl. 240—9 A** **6 Claims**

An improved fluorescent lighting fixture is provided. The fixture includes a one-piece troffer having a pair of integral side walls extending downwardly from a top portion. Each side wall includes a substantially horizontal shelf containing air vent openings therein. The troffer further includes duct retaining means formed integral with the side walls and adapted to hold air ducts in position to communicate with the air vents. In addition, the troffer includes a first set of latch and hinge pin engaging means adapted to secure a first cover frame in a position so as not to obstruct the air vents and a second set of latch and hinge pin engaging means adapted to secure a second cover frame in a position so as to completely block the vents.



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**3,838,269**

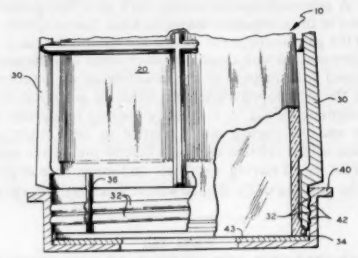
**GLOBE AND GLOBE GUARD FOR A LIGHTING FIXTURE**

**Andris Bogdanovs, Liverpool, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.**

**Filed Feb. 5, 1974, Ser. No. 428,545**

**Int. Cl. F21u** *15/02*

**U.S. Cl. 240—102 R** **2 Claims**



A retaining structure for a grid-type globe guard for a lighting fixture, consisting of a internally threaded mounting ring and an externally threaded split guard surrounding a frangible globe, the globe having a beveled flange and the split guard having a chamfered surface which coacts with the bevel to expand the threads into a seizing engagement with the threaded mounting ring as the guard is screwed into place to affix the globe.

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**3,838,270**

**DIGITAL MOTION DETECTOR**

**Forrest H. Ballinger, Grain Valley; Wilfred L. Farnham, Jr., Kansas City, and Robert E. Heggestad, Blue Springs, all of Mo., assignors to Harmon Industries, Inc., Grain Valley, Mo.**

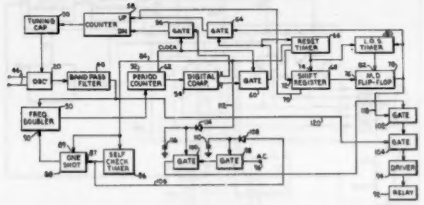
**Filed Sept. 24, 1973, Ser. No. 399,969**

**Int. Cl. B61l** *1/06*

**U.S. Cl. 246—130** **25 Claims**

A railroad train moving along an approach to a grade crossing (or other location of interest) is detected by apparatus that is responsive to the change in effective track inductance caused by the moving shunt. The tank circuit of an oscillator is connected to the track at the crossing and has an incrementally variable capacitor bank capable of compensating for the decrease in inductance that occurs as the train closes on the crossing, as well as slow inductance variations resulting from changing environmental conditions. The frequency of the oscillator output signal is continuously monitored, and correction pulses are produced when the signal

frequency deviates from a preselected normal frequency. A digital control arrangement responds to each correction pulse and varies the compensating capacitance in increments to return the signal to the normal frequency. Motion detection circuitry also receives the correction pulses and activates the crossing warning system when the spacing between successive pulses corresponds to a predetermined repetition rate indicating that a train is approaching. Accordingly, under normal




operating conditions, the oscillator frequency is held constant within a narrow range of deviation even when a train is approaching, but the rate of tank capacitance increase required to compensate for the continuous and rapid change in track inductance when a train is approaching is detected. The system also recognizes instantaneous changes such as would be caused by an artificial shunt or a broken rail, and distinguishes these from a moving train.

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**3,838,271**

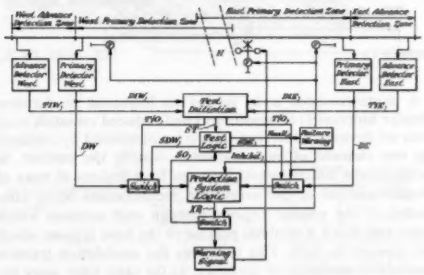
**FAILURE DETECTION FOR HIGHWAY GRADE CROSSING SIGNAL SYSTEMS**

**David A. Ackard, Claridge, and Donald E. Stark, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.**

**Filed Jan. 5, 1973, Ser. No. 321,132**

**Int. Cl. B61d** *1/02*

**U.S. Cl. 246—125** **5 Claims**




An advance train detector for each direction of travel is added to a conventional two-direction, overlap highway crossing protection system. Detection of a train, prior to its occupancy of the primary approach warning section, by an advance detector actuates a test logic means to drive the conventional crossing protection control logic through an operational sequence simulating the passage of a train. The test logic monitors the warning signal outputs from the conventional protection logic during this simulated train passage to assure that a proper, safe warning operation is possible for the approaching train. Failure to detect proper warning signal outputs activates a failure warning indication and inhibits response by the crossing logic to occupancy of the approach warning sections by the train.

**3,838,272**

**BRAKING CONDITION INDICATOR FOR RAPID TRANSIT TRAINS**

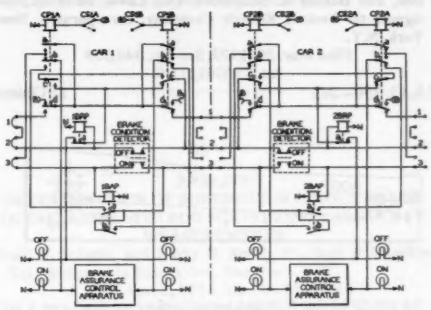
**Ivor H. Bull, London, England, assignor to Westinghouse Brake & Signal Co., Ltd., Chippenham, Wiltshire, England**

**Filed Nov. 14, 1973, Ser. No. 415,613**

**Claims priority, application Great Britain, Nov. 17, 1972, 53163/72**

**Int. Cl. B61l** *3/10*

**U.S. Cl. 246—169 R** **9 Claims**




A signal is transmitted from the lead car control position, when activated, through a train line channel completed over circuit connectors within the automatic couplers between cars and over contacts closed when other car control positions are inactive. This signal is returned by loop connectors in the rear coupler over one of two other train line channels, each including between car coupler circuit connectors and controlled on each car by a brake condition detector which completes one or the other circuit only when that car brakes are released (OFF) or applied (ON), respectively. OFF and ON registry relays on each car respond to a received signal to control indicators at the associated control locations which, at the lead position, display corresponding brake condition indications to guide the train operator. Brake assurance registry apparatus on the lead car, associated with an ATO system, also receives the brakes ON indication for registry as a brake assurance signal for the speed control apparatus.

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**3,838,273**

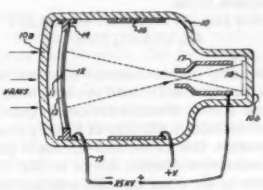
**X-RAY IMAGE INTENSIFIER INPUT**

**Dominic A. Cusano, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.**

**Filed May 30, 1972, Ser. No. 257,538**

**Int. Cl. H01j** *31/50*

**U.S. Cl. 250—213 VT** **6 Claims**



A barrier layer of an electrically conductive material such as indium oxide ($In_2O_3$), optically transparent to x-ray phosphor luminescence, is disposed between the phosphor layer and photocathode film of an x-ray image intensifier tube to provide sufficient electrical sheet conductance relative to the photocathode film. The barrier layer provides electron

replenishment to the photocathode at all points of electron emission therefrom to thereby reduce potential drop laterally across the photocathode from the ring electrode to the center of the photocathode, and also minimizes surface irregularities on the phosphor layer to thereby significantly reduce electron-optic image distortion in the image intensifier tube.

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**3,838,274**

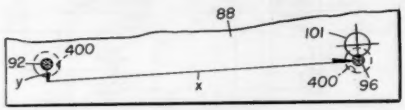
**ELECTRO-OPTICAL ARTICLE POSITIONING SYSTEM**

**Edward R. Doubek, Jr., Brookfield; John J. Kennedy, Riverside, and Donald K. Sandmore, Oak Lawn, all of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.**

**Filed Mar. 30, 1973, Ser. No. 346,559**

**Int. Cl. G01j** *1/20*

**U.S. Cl. 250—201** **12 Claims**




An article having first and second reference marks on a surface thereof is carried on a table adapted for movement in *x*, *y* and *θ* directions. To position the article in a preselected translational and rotary orientation with respect to first and second coordinate axes, a tv camera provides on a screen of a tv monitor an image of the surface of the article which encompasses both the first reference mark and a first coordinate point. Photodetectors on the screen of the monitor detect the position of the first reference mark with respect to the first coordinate point and generate signals for actuating the table for movement in the *x* and *y* directions to position the first reference mark at the first coordinate point. The table is then translated a linear distance equal to the linear distance between the reference marks to position the first reference mark at a second coordinate point. The tv camera then provides on the screen of the monitor an image which encompasses both the second reference mark and the first coordinate point, and the photodetectors generate signals to actuate the table for *θ* movement to rotate the article about the second coordinate point to position the second reference mark at the first coordinate point. The invention finds utility in positioning a substrate for receiving integrated circuit chips at predetermined locations thereon.

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**3,838,275**

**DETECTING APPARATUS FOR DETERMINING WHEN IMAGE IS IN FOCUS**

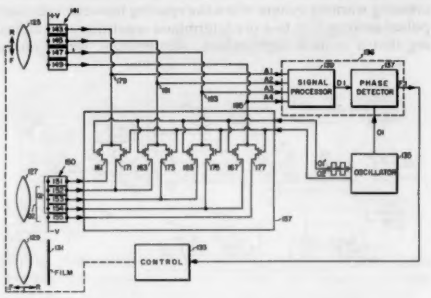
**Norman L. Stauffer, Englewood, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.**

**Filed July 18, 1973, Ser. No. 380,377**

**Int. Cl. G01j** *1/36*

**U.S. Cl. 250—204** **7 Claims**

A focus detecting system includes first and second lens devices for forming first and second auxiliary images of an object on first and second detector devices, respectively. Each detector device includes a plurality of linearly displaced light responsive elements. One of the lens devices is movable with respect to its associated detector device to shift the light distribution pattern of the corresponding auxiliary image in the direction of linear displacement of the light responsive elements. The movable lens device is so coupled to a movable objective lens, which focusses a principal image of the object on a light sensitive film, that when the principal image is in focus, the light distribution ppatterns of the first and second images will be correspondingly positioned with respect to the first and second detector devices, respectively. A reference signal of a predetermined frequency controls a switching circuit to compare the electrical signals from the light responsive elements in the first detector device, alternately, at the predetermined frequency of the reference signal, with electrical signals provided by first and second predetermined groups of the light




responsive elements in the second detector array. Signals are thereby provided which are processed and phase-detected to provide an output signal representative of the direction that the objective lens is displaced from a focus position at which the principal image is in sharpest focus.

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**3,838,276**

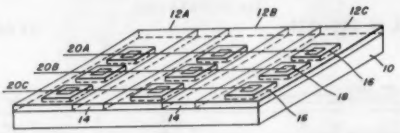
**PHOTOTRANSISTOR ARRAY HAVING REDUCED CROSSTALK**

**William G. Mend, Catonsville, and Robert C. Treude, Severn, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed June 29, 1973, Ser. No. 375,208**

**Int. Cl. H01l** *15/00*

**U.S. Cl. 250—211 J** **4 Claims**




A phototransistor array having an improved modulation transfer function (i.e., sensitivity) and reduced crosstalk over prior art devices of this type. This is accomplished by connecting one element of each transistor, usually the emitter, to metalizations which extend between base regions in rows of phototransistors in the array, the metalizations being connected to the emitter regions through stub sections which cover and block a minimal portion of the base regions which are exposed to light. This improves the modulation transfer function or sensitivity of the array. At the same time, since the metallizations extending along the rows of phototransistors cover and block light from the spaces between base regions, crosstalk is reduced.

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**3,838,277**

**OPTICAL SENSOR WITH LINEAR PARABOLIC MIRROR**

**Bodo Morgenstern, and Bert Soderholm, both of Santhorst, Netherlands, assignors to Organisation Europeenne de Recherches Spatiales, Neuilly-sur-Seine, France**

**Filed June 14, 1973, Ser. No. 370,030**

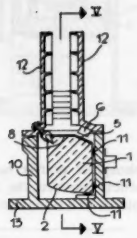
**Claims priority, application Belgium, June 28, 1972, 119239**

**Int. Cl. H01j** *3/14*

**U.S. Cl. 250—216** **3 Claims**

A fan beam optical sensor comprising a linear parabolic mirror, an elongated block element of transparent material

having a first entrance face for the incident light and a second face opposite to the first face and onto which is fixed said linear parabolic mirror with the reflecting surface thereof in contact with said second face. The block element further has a third longitudinal face opposite to the reflecting surface of said linear parabolic mirror, a layer of opaque material deposited onto said third longitudinal face with a longitudinal slit formed therein, said slit being located on the focal line of



said linear parabolic mirror. One or more detector means are disposed along said longitudinal slit to sense the reflected light energy from the linear parabolic mirror through said slit and to convert it into electrical signals. The entrance face can be covered with a shadowing mask of opaque material, said mask having a longitudinal aperture formed therein, said aperture having an increasing width from the middle of its length to both ends thereof.

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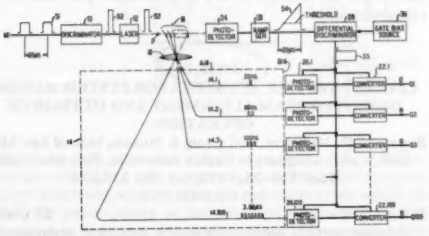
**3,838,278**

## OPTICAL SWITCHING NETWORK UTILIZING ORGAN ARRAYS OF OPTICAL FIBERS

**Michel Albert Duguay, and John Kirtland Galt, both of Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed Sept. 28, 1973, Ser. No. 401,633**
**Int. Cl. G02b 5/14; H04b 9/00**
**U.S. Cl. 250—227** **11 Claims**



In a hybrid opto-electronic switching system, electronic information pulses appearing on an input signal path are used to drive a laser which generates corresponding optical information pulses. Each of the optical information pulses is divided into a plurality *n* of optical sub-pulses each of which is coupled through lens means to separate ones of a plurality *n* of optical fibers in an organ array; i.e., an array of optical fibers in parallel with one another and cut to different lengths. Gating means, normally in an off-state, is interposed between the outputs of the fibers and *n* output electronic signal paths (e.g., subscriber lines). Because the fibers of the organ array introduce different transit time delays, the plurality of optical sub-pulses arrive at the gating means at different times. A control unit is utilized to connect the $m^{th}$ output signal path to the input signal path by driving the gating means into an on-state at a time when the optical sub-pulse on the $m^{th}$ fiber reaches the gating means. Also described are systems for connecting any one of *m* input signal paths to any one of *n* output signal paths. These systems can also be used in optical communications systems as well as in electronic systems.

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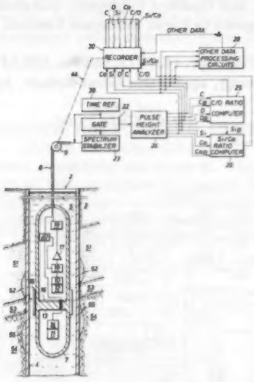
**3,838,279**

## DETERMINATION OF BOREHOLE WASHOUT BY USE OF INELASTIC NEUTRON SCATTERING GAMMA RAY MEASUREMENTS

**Ward E. Schultz, and Harry D. Smith, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.**

**Filed Apr. 3, 1973, Ser. No. 347,518**
**Int. Cl. G01v 5/00**
**U.S. Cl. 250—270** **5 Claims**

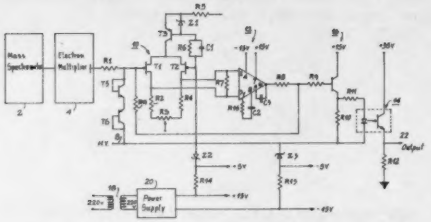


An illustrative embodiment of the invention provides a method for locating zones of borehole washout behind the casing in a cased well borehole. The formations in the vicinity of the borehole are repetitively irradiated with short duration bursts of fast neutrons. Gamma rays produced by the inelastic scattering of the fast neutrons are observed in at least four different energy regions in the gamma ray spectrum and are corrected for any lingering thermal neutron capture gamma ray background. The four energy regions include inelastic scattering gamma rays from carbon, oxygen, silicon and calcium. A first output signal related to the porosity (hydrogen index) is derived by summing the inelastic gamma rays in all four energy regions. Second and third output signals are formed by taking the carbon/oxygen and silicon/calcium ratio signals. The three output signals are then combined according to predetermined empirically derived relationships to produce an estimate of the location of zones of borehole washout behind the casing.

**3,838,280**
**AMPLIFIER AND QUADRUPOLE MASS SPECTROMETER UTILIZING SAME**

**Fritz S. Klein, Meonot Wolfson A, and Jehuda Yinon, 47 Menucha Venachla, both of Rehovot, Israel**

**Filed Feb. 16, 1973, Ser. No. 333,099**
**Claims priority, application Israel, Feb. 25, 1972, 38837**
**Int. Cl. H01j *39/34***
**U.S. Cl. 250—292** **3 Claims**



The negative ion output of a quadrupole mass spectrometer utilizes an amplifier system including an electron multiplier a differential amplifier, an operational amplifier, an emitter follower, and a photoisolator connected to receive the output of the emitter follower.

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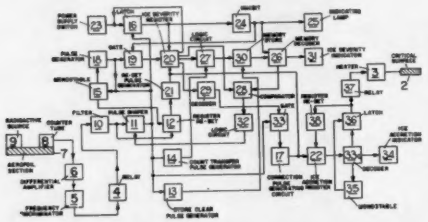
**3,838,281**
**AIRCRAFT ICE DETECTION EQUIPMENT WITH CORRECTION FOR SEVERE CONDITIONS**

**Michael Gordon Ellis Dean, Luton; John Raymond Keen, Kempston, and Geoffrey Edgington, Godalming, all of England, assignors to Lucas Aerospace Limited, Birmingham, England**

**Filed Apr. 11, 1973, Ser. No. 350,137**
**Claims priority, application Great Britain, Apr. 26, 1972, 19272/72**
**Int. Cl. G01n *23/06***
**U.S. Cl. 250—308** **4 Claims**



Ice detection equipment comprises electrical circuit means for effecting a count of a number of electrical pulses means for modifying the count depending upon the rate of production of the pulses.

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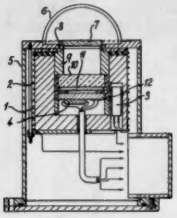
**3,838,282**
**SENSORS**

**Philip Brian Harris, St. Albans, England, assignor to National Research Development Corporation, London, England**

**Filed Apr. 19, 1973, Ser. No. 352,691**
**Claims priority, application Great Britain, Apr. 25, 1972, 17511/72**
**Int. Cl. G01t *1/00***
**U.S. Cl. 250—372** **7 Claims**

The invention concerns a sensor for measuring ultra-violet radiation over long periods. Interference filters remove unwanted radiation and a phosphor selected from zinc cadmium sulphide activated by copper and having a hexagonal crystal structure or strontium chlorosilicate activated by divalent europium with the phosphor matrix having an orthorhombic crystal structure, which converts the transmitted ultra-violet into radiation acceptable to a selenium photovoltaic cell.



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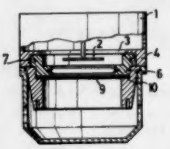
**3,838,283**
**IONIZATION SMOKE DETECTOR**

**Ingvar Andersson, Bandhagen, Sweden, assignor to Bevaknings AB Securitas, Stockholm-Hammarby, Sweden**

**Filed Oct. 18, 1972, Ser. No. 298,750**
**Claims priority, application Sweden, Oct. 20, 1971, 13304/71**
**Int. Cl. G01n *23/00***
**U.S. Cl. 250—381** **5 Claims**



An ionization smoke detector having an open and a closed chamber which are interconnected by a thin metallic membrane, constituting a common electrode. The membrane is urged against the periphery of an opening between the chambers by means provided on a removable cover defining the open chamber. A single source of radiation is provided in the closed chamber.

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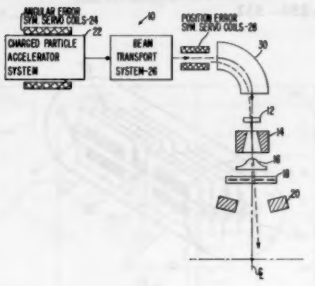
**3,838,284**
**LINEAR PARTICLE ACCELERATOR SYSTEM HAVING IMPROVED BEAM ALIGNMENT AND METHOD OF OPERATION**

**Raymond D. McIntyre, and Craig S. Nunan, both of Los Altos Hills, Calif., assignors to Varian Associates, Palo Alto, Calif.**

**Filed Feb. 26, 1973, Ser. No. 335,634**
**Int. Cl. G01t *1/18***
**U.S. Cl. 250—385** **25 Claims**

A linear particle accelerator having detection apparatus for detecting the presence of and correcting for beam misalignment. The linear accelerator includes a charged particle accelerator system and deflection coils for changing both the positional and angular displacement of a charged particle beam. A target is disposed in the particle beam path for emitting X-rays upon being struck by the charged particles. The photon field pattern developed by the target takes the form of a forward-peaked lobe configuration extending from the target. An arrangement of radiation responsive electrodes is disposed in the radiation field for developing electrical

signals responsive to changes in the lobe pattern. The signals developed by the radiation responsive electrodes are applied




to differential servo circuitry for applying signals to the deflection coils to correct for both positional and axial misalignment of the particle beam.

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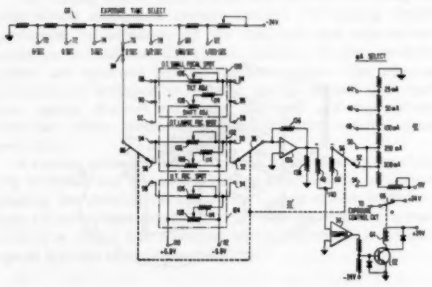
**3,838,285**

## X-RAY TUBE ANODE PROTECTIVE CIRCUIT

**Melvin P. Siedband, Madison, Wis.; Jack L. James, Westminister, and Ambalal T. Patel, Baltimore, both of Md., assignors to CGR Medical Corporation, Baltimore, Md.**

**Filed May 10, 1973, Ser. No. 358,869**
**Int. Cl. H05g** *1/28*
**U.S. Cl. 250—413** **10 Claims**



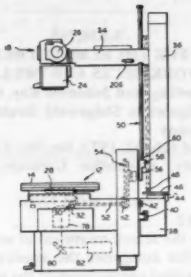

An X-ray tube protective circuit wherein the selected exposure time and X-ray tube power are compared prior to operation to determine whether or not a condition exists which exceeds the anode rating of the tube and thereafter prevents operation in the event that such condition does exists while permitting an X-ray exposure for a safe condition. The protective circuit utilizes a single empirically derived anode "rating chart" curve which is representative of a generalized or standard X-ray tube rating chart curve. This empirical curve is generated by a series connected string of resistors connected to the exposure time select switch. This curve is then tilted and/or offset for selected operating modes in order to substantially conform to the acual rating curve for the respective various focal spot sizes and anode speeds of the particular X-ray tube in use.

**3,838,286**

## X-RAY TABLE WITH SELF-STORING TOMOGRAPHIC COUPLING BAR

**John F. Prendergast, Franklin; Ralph K. Chrapkowski, St. Francis, and George R. Lang, New Berlin, all of Wis., assignors to General Electric Comapny, Schenectady, N.Y.**

**Filed Nov. 16, 1973, Ser. No. 416,590**
**Int. Cl. G01n** *23/00*
**U.S. Cl. 250—445** **10 Claims**



An X-ray tube is mounted over an X-ray table on a horizontally extending shaft means which enables the X-ray tube to be angulated as it is translated longitudinally of the X-ray table top for tomographic and angular radiographic procedures. A clamping mechanism is provided for connecting the coupling bar to the rotational axis of the X-ray tube so that the bar may be engaged selectively positively or slidably or may be completely disconnected. The coupling bar is detachable from the tomographic fulcrum assembly and when it is completely separated from the tube rotational mechanism, the coupling bar may be re-engaged with a stationary pin in a storage position.

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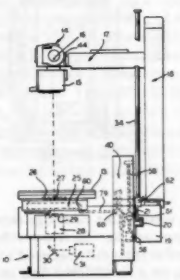
**3,838,287**

## FLUOROSCOPIC LOCALIZATION SYSTEM FOR ANGULAR RADIOGRAPHY

**David M. Barrett, Brookfield, and Ralph K. Chrapkowski, St. Francis, both of Wis., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Nov. 7, 1973, Ser. No. 413,442**
**Int. Cl. G01n** *23/00*
**U.S. Cl. 250—445** **4 Claims**



A diagnostic x-ray table has a film cassette supported on a Bucky carriage beneath the table top. A fluoroscopic image tube is fixedly located below the Bucky carriage. An x-ray tube is mounted above the table top for being translated and angulated correspondingly for providing oblique view radiographs. For tomographic procedures and for oblique radiographs a fulcrum bar couples the x-ray tube to the Bucky carriage, so the central ray of the x-ray beam always coincides

with the center of the film. The pivot axis of the fulcrum bar is vertically adjustable so it may extend laterally through any selected layer of a patient reposed on the table top, through the plane of a film in the cassette and through the plane of the sensitive surface of the image intensifier tube. During angular radiography, the fulcrum axis can be located in the plane of the image tube wherein automatic means are provided for shifting the Bucky in the same direction as the x-ray tube so that the area being radiographed corresponds with the image viewed by means of the image tube.

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**3,838,288**

## METHOD FOR THE REMELT TREATMENT OF WORKPIECES AND THE LIKE

**Heinz Stolz, Otterfing, and Johannes Koy, Germering, both of Germany, assignors to Steigewald Strahltechnik G.m.b.H., Munich, Germany**

**Filed Feb. 22, 1973, Ser. No. 334,775**

**Claims priority, application Germany, Feb. 26, 1972, 2209147**

**Int. Cl. H01j 37/00**

**U.S. Cl. 250—492** **3 Claims**

A method for the remelt treatment of workpieces, machine parts and the like comprises the application of energy by means of a controlled energy beam to the remelt region in two successive steps to avoid formation of pores. In the first remelting step, the material within the remelt region is melted and allowed to solidify, and is then again remelted in a second step in which the impingement of energy is controlled to remelt only the region of material previously remelted and solidified.

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**3,838,289**

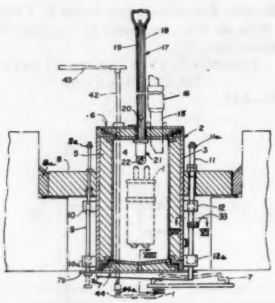
## RADIOACTIVE WASTE FILTER REMOVAL SYSTEM

**Donald P. White, Reading, Pa., assignor to Gilbert Associates, Inc., Reading, Pa.**

**Filed Aug. 29, 1972, Ser. No. 284,672**

**Int. Cl. G21f 1/00**

**U.S. Cl. 250—506** **8 Claims**



A radioactive waste filter cartridge removal apparatus comprising a shielding cask having removable top and bottom lids and a support collar integrally secured to the outer wall of the cask for support on a shouldered and shimmed support. Two lowering assemblies comprising rods extending vertically through said support collar at diametrically opposite sides of the cask are provided for effecting lowering movements of the bottom lid. One of said rods has its lower end welded to the peripheral portion of the bottom lid whereby such lid may be rotated about the axis of the rod and thus clear the bottom opening of the cask to permit vertical downward movement of the filter cartridge through such opening. A grappling tool and viewer are mounted on the top lid.

**3,838,290**

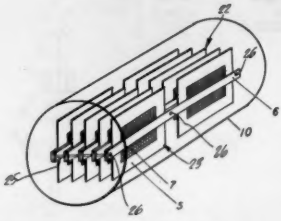
## OZONE GENERATING MEANS

**Gary V. Crooks, 1702 Olive St., Santa Barbara, Calif. 93101**

**Continuation-in-part of Ser. No. 154,514, June 18, 1971, abandoned. This application Dec. 29, 1972, Ser. No. 319,220**

**Int. Cl. C01b 13/12**

**U.S. Cl. 250—532** **6 Claims**



An ozone generator producing silent electric discharges uses wire mesh electrodes between which a dielectric sheet is maintained sandwiched by individual bus bars contacting a corresponding wire mesh electrode. A plurality of such assemblies mounted in spaced relationship to each other for the flow of air therebetween is disposed within a cylindrical chamber through which air for ozonizing and cooling is circulated.

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**3,838,291**

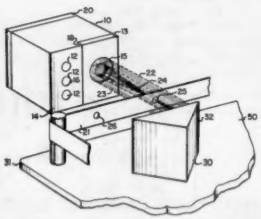
## DETECTOR INDICATING AVAILABILITY AND POSITION OF TAPE

**Andre F. Marion, and George N. Kaposhilin, both of Palo Alto, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.**

**Filed May 17, 1973, Ser. No. 361,357**

**Int. Cl. G08c 9/06**

**U.S. Cl. 250—571** **10 Claims**



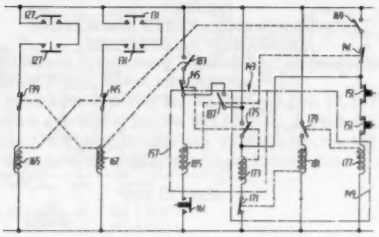
A tape detector operates inside an information recording and retrieving system structure. In the detector, a lense-equipped light source located inside a housing produces three beams of light which, after crossing above, below, and through an ordinary commercial recording tape, pass through an optical prism where they are deflected back toward the light source housing. On their return, the light beams again cross above, below, and through the tape and then converge on the surfaces of three photodetectors arranged in a vertical line in the same housing as and adjacent to the light source. Signals from the photodetectors indicate the following: the upper photodetectors signal whether the tape is available for recording, the middle one signals a particular position of the tape such as the beginning or the end of the tape, and the lower one signals the presence or absence of a tape cartridge within the system structure.

3,838,292

## TAPERED OBJECT ATTITUDE SENSING AND TURNING SYSTEM

Robert Roy Sullivan, P.O. Box 236, Fowler, Colo. 81039

Filed May 10, 1973, Ser. No. 358,903
Int. Cl. B65g 47/24
U.S. Cl. 307—112 7 Claims



A tapered object attitude sensing and turning system is described wherein a sensor assembly includes a detector head comprising a butt-end and a tapered-end pivotal feeler arms for making contact with the same side of each tapered object passing the detector head. The feeler arms have freedom of movement such that contact with tapered objects causes them to pivot outwardly. In addition, a mechanical linkage between the feeler arms causes the tapered-end feeler arm to pivot in response to pivoting of the butt-end pivot arm, but at a faster angular rate than the butt-end feeler arm. A butt-end sensor switch is actuated in response to pivoting of the butt-end feeler arm and a tapered-end sensor switch is actuated in response to pivoting of the tapered-end feeler arm which is caused by tapered objects. Two structural embodiments of the detecting head are described.

The sensing and turning system also includes a sensing circuit which comprises storage circuits for storing signals produced by actuation of the butt-end and tapered-end switches. In addition, the circuit includes clearing switches which are actuated by the tapered objects. The clearing switches are arranged so that the storage circuits only store the signals derived from the butt-end and tapered-end switches while detected tapered objects actuate these switches.

A turning system is located immediately following the clearing switches and is actuated in response to tapered objects passing the clearing switches. The turning system includes a gate for sweeping a tapered end of a tapered object off a main conveyor onto a side conveyor which conveys at a different speed than the main conveyor.

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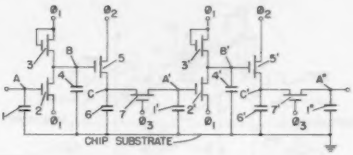
3,838,293

## THREE CLOCK PHASE, FOUR TRANSISTOR PER STAGE SHIFT REGISTER

Rajendra B. Shah, Escondido, Calif., assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 11, 1973, Ser. No. 405,676
Int. Cl. H03k 23/24, 25/02
U.S. Cl. 307—221 D 3 Claims

In order to achieve increased packing density, a simplified ratioless shift register stage is provided which utilizes only four transistors per stage and requires only three clock signals. A stage input signal is clocked through a transistor dynamic inverter with a $\phi_1$ clock signal. The information is then coupled through a single transistor inverter with a $\phi_2$ clock signal which is present concurrently with and also extends beyond $\phi_1$. After the termination of $\phi_2$ the information is coupled to a




stage output point through a single transistor switch actuated by a $\phi_2$ clock signal.

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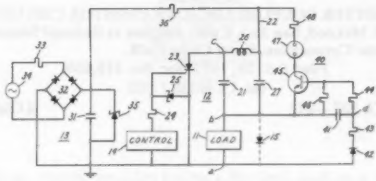
3,838,294

## MONITOR FOR REPETITIVE PULSE FORMING CIRCUIT

Bernard D. Leete, Newtown Square, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Sept. 27, 1973, Ser. No. 401,486
Int. Cl. G08b 21/00
U.S. Cl. 307—233 12 Claims




For monitoring the operation of a circuit that periodically supplies pulses of electric current to a connected load, a capacitor is connected in parallel with the load so as to be periodically charged to a voltage of appreciable magnitude. During the intermittent intervals between pulses, the capacitor partially discharges through a discharge circuit having a relatively long time constant. Voltage will therefore be continuously present on the capacitor so long as the operating frequency of the pulse forming circuit does not fall substantially below normal, and means responsive to this voltage provides an indication that the circuit is functioning properly.

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3,838,295

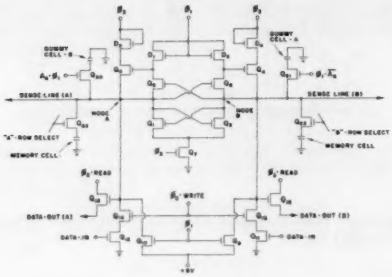
## RATIOLESS MOS SENSE AMPLIFIER

Edward Lindell, Long Beach, Calif., assignor to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed Feb. 5, 1973, Ser. No. 329,644
Int. Cl. H03k 5/00
U.S. Cl. 307—238 6 Claims

A sense amplifier for sensing stored information in a memory system particularly of the integrated circuit type wherein a cross-coupled symmetrical sense amplifier is

operated to provide ratioless operation. The invention further utilizes a cross-coupled discriminator to provide improved signal detection which, in conjunction with the ratioless differential amplifier with gated conditional feedback, provides a significant reduction in power, higher operating speed and a reduction in required chip area since minimum geometry devices may be utilized.



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**3,838,296**

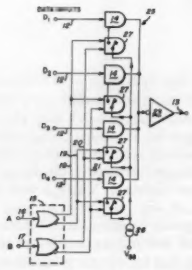
**EMITTER COUPLED LOGIC TRANSISTOR CIRCUIT**

**Eric S. McLeod, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clare, Calif.**

**Filed Oct. 29, 1973, Ser. No. 410,609**

**Int. Cl. H03k** *17/00*

**U.S. Cl. 307—243** **4 Claims**



In an emitter coupled logic transistor circuit, a plurality of data gates are arranged for multiplexing input data onto a common output means in response to a coded multiplex signal which selects respective data gates sequentially. A common current source is connected to respective ones of said data gates via the intermediary of respective current switch gates, such current switch gates being responsive to the decoded input select command signals for selectively energizing respective ones of said data gates, whereby power consumed by the multiplex circuit is minimized since only a selected data gate is powered up at any given time.

**3,838,297**

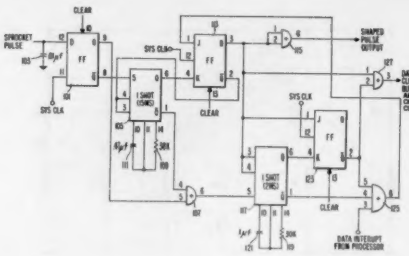
**PULSE SHAPING CIRCUIT**

**Eugene E. Bardo, Levittown, and Franklin T. Schroeder, Exton, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.**

**Filed June 14, 1973, Ser. No. 369,983**

**Int. Cl. H03k** *5/00*

**U.S. Cl. 307—268** **9 Claims**



A latching one shot actuated flip-flop switch circuit is provided for transforming a distorted asynchronous pulse into a clean clock-synchronous pulse. Circuit time constants and logic interlocks predetermine the minimum duration of the output pulse.

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**3,838,298**

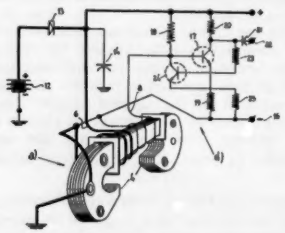
**ELECTRONIC MAGNETO**

**Fuasto Orlando Torres, Peru 89, Piso 2, Buenos Aires, Argentina**

**Filed Feb. 9, 1973, Ser. No. 331,032**

**Int. Cl. H01v** *5/00*

**U.S. Cl. 307—309** **3 Claims**



It comprises an electromagnetic device and an additional electronic circuit capable of amplifying the electric pulses supplied by said electromagnetic device, which consists of a horseshoe shaped and symmetric core, integrated by two curved sectors alternately butt junction stacked, riveted plates, which, at their free ends, provides in each case polar pole pieces opposing each other; with a coil located in the central body of the core, comprising a primary winding and a secondary winding, adequately insulated between each other, and with inidividual output terminals, to which is connected th electronic circuit referred to, which, in turn, consists of a first transistor and a second transistor interconnected between each other in the following way: the base of the first transistor is connected to the collector of the second transistor, by means of a resistor; another resistor interconnects the positive power supply line to the collector of this second transistor, while the collector of the first transistor is interconnected to the base of the second transistor, and also ties into the battery positive line by means of another resistor and to the secondary winding of the electromagnetic device, whereas the emitter of the latter is connected to the negative power supply line by

means of another resistor, at the same time. The collector of the second transistor is tied by means of a capacitor, to an output terminal, being moreover, connected to the positive 12-volts battery line and to the primary winding of the electromagnetic device, a rectifier diode and a capacitor, while another resistor is connected between the emitter of the second transistor and negative power supply line.

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**3,838,299**

## SYSTEM FOR GENERATING PERIODICAL MECHANICAL VIBRATIONS

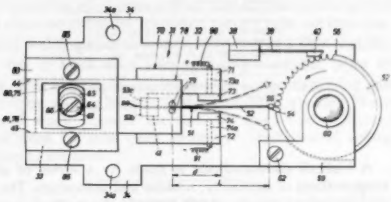
**Franz Elkuch, Schellenberg, Liechtenstein, assignor to Etablissement Procor, Vaduz, Liechtenstein**

**Continuation-in-part of Ser. No. 209,142, Dec. 17, 1971, , which is a division of Ser. No. 863,056, Oct. 2, 1969, Pat. No. 3,641,373. This application Aug. 27, 1973, Ser. No. 391,999**

**Claims priority, application Great Britain, Feb. 1, 1973, 5129/73**

**Int. Cl. H02n** *1/00*

**U.S. Cl. 310—6** **7 Claims**



A simplified swing system producing mechanical vibratory movements by means of electric energy and dispensing with any active elements execpt for any energy source. Three electrodes are arranged to constitute a mechanical oscillating arrangement, one electrode of which is a resilient vibrating reed capable of oscillating by flexing and swinging toward and away from the other electrodes, a charge compensation occurring when the vibrating reed electrode approaches either one of the other two electrodes closely enough within an electric field established therebetween. In the position of rest, said electrodes are sufficiently spaced from each other but aligned face to face. When said vibrating reed is vibrated, it acts, via a movement-converting body fixed at its free vibrating end, upon a cog-wheel advanced by one tooth for each period of oscillating movement of said vibrating reed. Control means adjust the frequency of said vibrating reed and are arranged in such a way that the requirements for isochronism are met in any frequency-adjusting position of said control means.

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**3,838,300**

## BRUSH HOLDER FOR PORTABLE HAND TOOLS

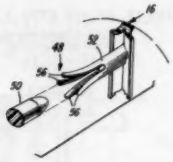
**William Harvey O'Connor, III, Fayetteville, N.C., assignor to The Black and Decker Manufacturing Company, Towson, Md.**

**Filed Aug. 27, 1973, Ser. No. 391,531**

**Int. Cl. H01r** *39/40*

**U.S. Cl. 310—239** **6 Claims**

An electrically operated portable tool including a housing enclosing a motor including a stationary field and a rotatable armature. The housing includes a rear bridge supporting one end of an armature shaft and including open slots for receiving brush holders, the latter holding carbon brushes engaging a commutator which is part of the armature. The brush holders are retained in place by a holder which is integral with a rear butt section of the housing, thereby eliminating separate brush assembly retention screws and preventing accidental dislodgment of the brush assemblies as well as orienting and maintaining the brush assemblies in their assembled operative positions.



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**3,838,301**

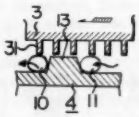
## ELECTRIC MACHINE WITH FLYWHEEL-FAN

**Kazuyoshi Moriyama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan**

**Filed Feb. 9, 1973, Ser. No. 331,075**

**Int. Cl. H02k** *9/00, 9/06*

**U.S. Cl. 310—60** **6 Claims**



In an electric machine having a flywheel, such as a clutch motor, blades are integrally formed on one main surface of the flywheel, and a fan casing is formed in the end bracket of the machine, which casing has perforations for air inhalation and exhalation, so that the machine may be provided with the function of a blower without making any substantial change in its structure.

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**3,838,302**

## ROTARY RECTIFIER ARRANGEMENT FOR THE EXCITATION OF SYNCHRONOUS MACHINES

**Erich Dreissigacker, and Kurt Jager, both of Mannheim, Germany, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland**

**Filed Dec. 8, 1972, Ser. No. 313,412**

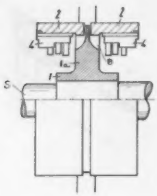
**Claims priority, application Germany, Dec. 10, 1971, 2161577**

**Int. Cl. H02k** *11/00*

**U.S. Cl. 310—68 D** **10 Claims**

A rotary rectifier arrangement for excitation of the inductor of a synchronous electrical machine in which the a.c. output from the armature of an exciter coupled to the shaft of the synchronous machine is rectified and fed to the rotary inductor component of the machine. The rectifiers are supported so as to rotate with the exciter armature by means of a composite

collar structure including an integrally formed hub and radially extending part mounted on the exciter shaft and a pair of cylindrical carrier rings extending axially in opposite



directions from the radial part of the collar structure and which are shrunk onto the radial part, the rectifiers being made up into separate assemblies which are distributed around, and secured to the under side of, the carrier rings.

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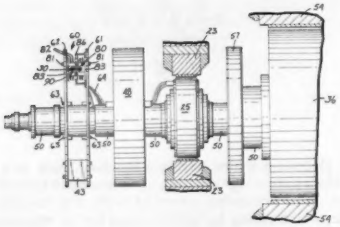
**3,838,303**

## MOUNTING APPARATUS FOR DISC-TYPE SEMICONDUCTORS

**Richard G. Ernst, Anoka, Minn., assignor to Electric Machinery Mfg., Minneapolis, Minn.**

**Filed Mar. 21, 1973, Ser. No. 343,427**
**Int. Cl. H02k** *11/00*
**U.S. Cl. 310—68 D** **9 Claims**



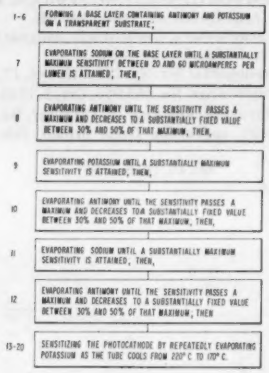
An improved semiconductor mounting apparatus for mounting high power disc-type packaged semiconductors for operative use on rotating members of electric machines. A first heat sink mounting member is rigidly mounted for rotation with a rotating member of the machine. A second heat sink mounting member is movably clamped to the first balanced sink member and aligned therewith to sandwich a disc-type semiconductor therebetween. The mounting clamp includes spring washers for enabling a predetermined clamping force to be applied to the semiconductor electrodes. The second heat sink, in response to centrifugal force, applies a controlled contact pressure to the semiconductor electrodes that varies with the rotational speed of the motor and equals the desired mounting pressure at the synchronous speed of the motor. In an alternate embodiment, the first and second heat sink members are pre-clamped to the semiconductor at the desired contact mounting pressure. A counterweight apparatus, responsive to centrifugal force, balances the centrifugal force effect upon the second heat sink member during rotation to maintain a constant mounting pressure upon the semiconductor electrodes regardless of the rotational speed of the motor.

**3,838,304**

## METHOD OF MAKING A BIALKALI PHOTOCATHODE WITH IMPROVED SENSITIVITY AND HIGH TEMPERATURE OPERATING CHARACTERISTICS

**Arthur Frederick McDonie, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.**

**Filed July 12, 1973, Ser. No. 378,517**
**Int. Cl. H01j** *39/00*
**U.S. Cl. 313—94** **10 Claims**


1-6
FORMING A BASE LAYER CONTAINING ANTIMONY AND POTASSIUM ON A TRANSPARENT SUBSTRATE;
7
EVAPORATING SODIUM ON THE BASE LAYER UNTIL A SUBSTANTIALLY MAXIMUM SENSITIVITY BETWEEN 20 AND 60 MICROAMPERES PER LUMEN IS ATTAINED; THEN,
8
EVAPORATING ANTIMONY UNTIL THE SENSITIVITY PASSES A MAXIMUM AND DECREASES TO A SUBSTANTIALLY FIXED VALUE BETWEEN 30% AND 50% OF THAT MAXIMUM; THEN,
9
EVAPORATING POTASSIUM UNTIL A SUBSTANTIALLY MAXIMUM SENSITIVITY IS ATTAINED; THEN,
10
EVAPORATING ANTIMONY UNTIL THE SENSITIVITY PASSES A MAXIMUM AND DECREASES TO A SUBSTANTIALLY FIXED VALUE BETWEEN 30% AND 50% OF THAT MAXIMUM; THEN,
11
EVAPORATING SODIUM UNTIL A SUBSTANTIALLY MAXIMUM SENSITIVITY IS ATTAINED; THEN,
12
EVAPORATING ANTIMONY UNTIL THE SENSITIVITY PASSES A MAXIMUM AND DECREASES TO A SUBSTANTIALLY FIXED VALUE BETWEEN 30% AND 50% OF THAT MAXIMUM; THEN
13-20
SENSITIZING THE PHOTOCATHODE BY REPEATEDLY EVAPORATING POTASSIUM AS THE TUBE COOLS FROM 220° C TO 170° C

A bialkali photocathode is made by a series of alternate evaporations of antimony, sodium and potassium. The disclosure includes a photocathode made by the method described.

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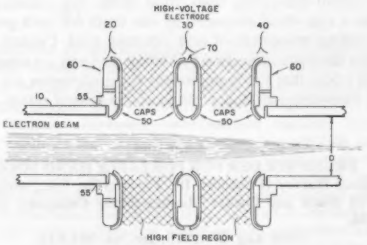
**3,838,305**

## REPLACEABLE ELECTRODE SURFACES FOR HIGH FIELD ELECTROSTATIC LENSES

**Robert L. Seliger, Agoura, and Wayne P. Fleming, Newbury Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Aug. 24, 1973, Ser. No. 391,414**
**Int. Cl. H01j** *1/00*
**U.S. Cl. 313—237** **8 Claims**



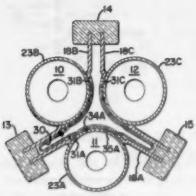

A two-piece electrode assembly consists of a permanent mounting fixture and a replaceable, polished electrode surface that snaps on the mounting fixture. When this electrode surface in an electrostatic lens becomes pitted, it can easily be snapped off and a new surface snapped on without need for realignment.

3,838,306

## ELECTRON GUN ASSEMBLY WITH FLEXIBLE ELECTRICAL INTERCONNECTION FOR CORRESPONDING ELECTRODES AND METHOD OF FABRICATING SAME

Leonard W. Jenne, Jr., Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,684
Int. Cl. H01j 29/50, 29/02
U.S. Cl. 313—409 15 Claims



Corresponding electrodes in each respective electron gun of a triple electron gun color television picture tube are interconnected by welding so as to electrically couple a light metallic ribbon tab to each such corresponding electrode prior to glassing. This allows glassing without need for disturbing gun alignment by making welded connections after glassing. Weld burrs and sharp corners are thereby spaced at sufficient distance from the tube neck to reduce likelihood of arcing therefrom to the neck.

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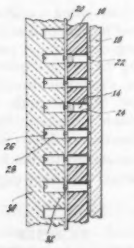
3,838,307

## COLOR PLASMA DISPLAY

James Vincent Masi, Monroe, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 14, 1972, Ser. No. 280,513
Int. Cl. H01j 61/44
U.S. Cl. 313—486 7 Claims



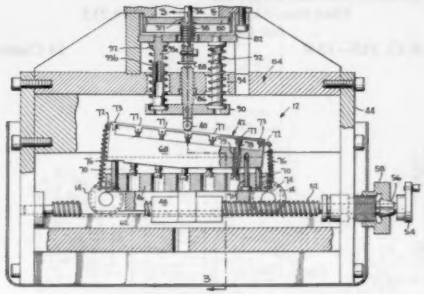
This invention relates to a plasma display device adapted for generating a display in a color other than the characteristic color of the plasma gas utilized. At least one surface of each cell cavity of the device is formed at least in part of a multiphoton down-conversion phosphor (an anti-Stokes phosphor). For one embodiment of the invention the phosphor is coated on the walls of the cavity. For another embodiment of the invention, the cavity is formed as an opening through a member of an insulating material positioned between a pair of insulating plates, the plates forming the ends of the cavity, and the phosphor is incorporated into the material of at least one of the plates at least in the region thereof forming the end of the cavity.

3,838,308

## GANG-TUNED MULTICAVITY MICROWAVE TUBE

George K. Merdinian, Los Altos, and Yosuke M. Mizuhara, Palo Alto, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Nov. 5, 1973, Ser. No. 413,013
Int. Cl. H01j 25/10
U.S. Cl. 315—5.47 7 Claims



A continuously tunable multicavity klystron and gang tuning apparatus therefor includes a separate tuning element in association with each klystron cavity resonator for setting the respective cavity resonant frequencies. A carriage which is translated in a generally straight line path in response to the rotation of a single tuning shaft carries a plurality of elongated deformable metal bands. These bands are variable pitch cams that are followed by cam followers coupled to the tuning elements for each of cavity resonators. Each deformable band is supported on the carriage at several discrete points along the band length, and adjustment screws are provided for setting the band height and consequent tuning element contour. Such adjustment compensates for the nonlinear tuning characteristic of the cavity resonators in order to thereby obtain a resultant substantially linear cavity resonant frequency versus tuning shaft rotation characteristic. Because of the deformable nature of the bands, a smooth and continuous cam surface is formed between these discrete points.

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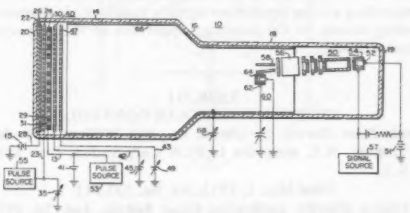
3,838,309

## DIRECT VIEW STORAGE TUBE HAVING A LATERAL FIELD NEUTRALIZING ELECTRODE ADJACENT THE STORAGE GRID

Jon W. Ogland, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 16, 1972, Ser. No. 263,561
Int. Cl. H01j 29/41
U.S. Cl. 315—12 9 Claims




A transmission type direct storage tube in which a lateral field neutralizer electrode is positioned adjacent the transmission storage electrode to confine the lateral effects of charge

on the storage electrode to individual mesh openings in the storage electrode and prevent interaction with neighboring mesh openings.

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**3,838,310**

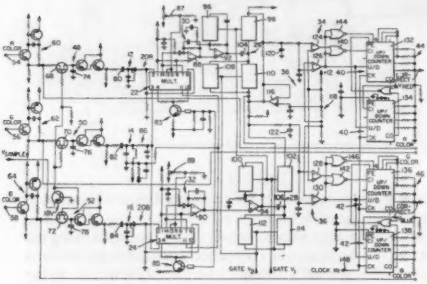
**AUTO CENTERING FOR MULTIPLE TUBE TELEVISION COLOR CAMERAS**

**George R. Varian, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.**

**Filed Mar. 23, 1973, Ser. No. 344,215**

**Int. Cl. H01j *29/70***

**U.S. Cl. 315—13 R** **14 Claims**



An automatic centering system is provided for multiple tube color cameras utilizing a plurality of channels of electronics, wherein at least one channel generates a signal which is the first derivative of either the red, green or blue color video signal introduced into the channels from a video color camera. In one embodiment of the centering circuit, the red and blue color signals are introduced to respective channels of the system, and each are multiplied by the first derivative of the green color signal. The resulting pair of centering signals are integrated to provide error signals which represent the amount and direction of any mis-centering between the green component image and the red and/or blue component images respectively. In another embodiment of the centering circuits, the first derivatives of the red and blue signals are each multiplied by the green color signal. The resulting pair of centering signals are integrated to provide error signals which represent the amount and direction of any mis-centering between the green and red and/or blue component images. Either of the embodiments may be used to correct vertical and/or horizontal mis-centering. In either embodiment, any mis-centering in either the vertical or horizontal direction is used to control up/down counter means, whereby a corresponding analog correction signal is supplied, via digital-to-analog means, to the scanning apparatus of the respective camera tubes.

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**3,838,311**

**STORAGE TUBE FOCUS CONTROL**

**Denis Peter Dorsey, Levittown, Pa., and William E. Rodda, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.**

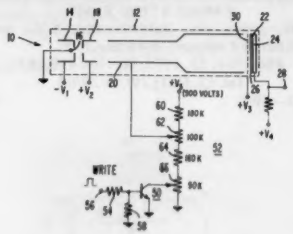
**Filed Mar. 1, 1973, Ser. No. 337,011**

**Claims priority, application Great Britain, Apr. 24, 1972, 19019/72**

**Int. Cl. H01j *29/70***

**U.S. Cl. 315—12** **5 Claims**

That loss of resolution which results in the image recorded in a storage tube when writing with high voltages which cause secondary emission can be minimized, in accordance with the invention, by reducing the bias voltage on its focus electrode




when the storage tube is changed from its "READ" to its "-WRITE" mode of operation.

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**3,838,312**

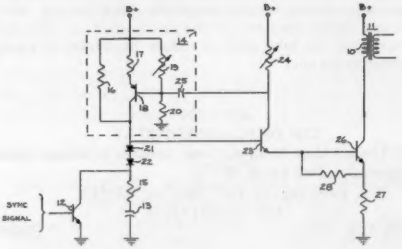
**NON-LINEAR DEFLECTION DRIVE CIRCUIT**

**John D. Jordan, Chesapeake, Va., assignor to General Electric Company, Portsmouth, Va.**

**Filed Aug. 31, 1971, Ser. No. 176,470**

**Int. Cl. H01j *29/70***

**U.S. Cl. 315—27 TD** **12 Claims**




A drive stage for controlling a cathode ray tube deflection circuit. Current output is regulated as a function of voltage appearing across a sweep capacitor. A pair of charging paths are provided for charging the sweep capacitor. A first path is passive and couples the capacitor directly to a source of bias potential, while the second path includes an electron discharge device which modulates the conductivity of the second circuit as a function of drive current. Current from the second path adds increasingly to that from the first path to accelerate the rate at which the sweep capacitor is charged.

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**3,838,313**

**BEAM CURRENT REGULATOR FOR ELECTRON BEAM MACHINES**

**Harry B. Anderson, South Windsor, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.**

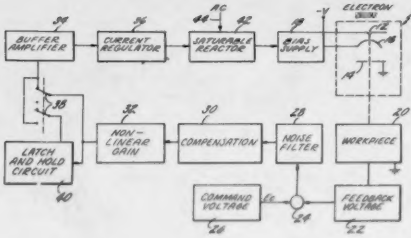
**Filed May 21, 1973, Ser. No. 362,152**

**Int. Cl. G05f *1/00*; H05b *37/02***

**U.S. Cl. 315—291** **4 Claims**

In an electron beam machine for welding or cuting a workpiece, the current produced by the electron gun is regulated by a beam regulating system to maintain a programmed value. A feedback voltage proportional to beam current is compared with a commanded voltage proportional to desired beam current, any difference therebetween in the form of an error voltage being used to vary the bias voltage of the electron gun and modify the beam current. A novel saturable reactor circuit permits the bias voltage which is at a high potential to be

varied by a DC current which varies about ground level. A novel latch and hold circuit permits the beam current regulator to be bypassed when the electron gun filament is "peaked". A novel current adder circuit permits the automatic programming of multi-level beam currents.

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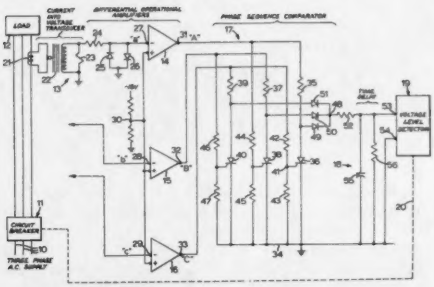
**3,838,314**

## DETECTOR FOR REVERSE AND OPEN PHASE IN A THREE PHASE CIRCUIT

**David Richard Boothman, Ennismore, Ontario, and David Walter Nutt, Peterborough, Ontario, both of Canada, assignors to Canadian General Electric Company, Limited, Toronto, Canada**

**Filed May 21, 1973, Ser. No. 362,049**
**Claims priority, application Canada, Oct. 11, 1972, 153622**
**Int. Cl. H02h** *3/26*
**U.S. Cl. 317—48** **8 Claims**




According to the invention a transducer coupled to a three phase AC supply for a load provides three trains overlapping voltage waveforms displaced 120° in time and of phase sequence following the supply sequence. A waveform converter converts these voltage waveforms into three trains of square waveforms of the same repetition rate, substantially the same duration, and displaced 120° in time but overlapping in duration. The square waveforms are then impressed on a wye circuit configuration consisting of a resistor and a gate controlled semiconductor connected in series and to the wye point in that order for each leg. Each semiconductor is gated on upon its anode going positive by another waveform which is of gating polarity and overlaps the positive going anode waveform. During normal three phase operation of the load, the positive voltages on the anodes of the semiconductor are substantially zero. During reversal or loss of phase of the load, these voltages are no longer zero and are detected by a detector circuit which signals the presence of the fault.

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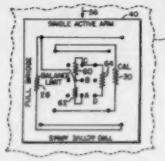
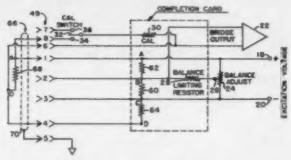
**3,838,315**

## UNIVERSAL BRIDGE COMPLETION CIRCUIT FOR SELECTIVELY CONNECTING RESISTORS FOR INCLUSION IN A BRIDGE CIRCUIT

**James B. Wilbourn, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.**

**Filed Oct. 1, 1973, Ser. No. 402,070**
**Int. Cl. H02b** *1/04*; **H05k** *1/14*
**U.S. Cl. 317—99** **11 Claims**




A mechanism is provided in which an impedance bridge circuit may be completed by using any of three combinations of bridge impedances in combination with external resistive devices. The mechanism comprises two circuit boards having complementary connectors symmetrically positioned so that the orientation of the boards can be rotated. The mechanism, in combination with external resistive devices, allows the formation of a complete four-arm impedance bridge by rotating the circuit boards 90, 180 or 270°.

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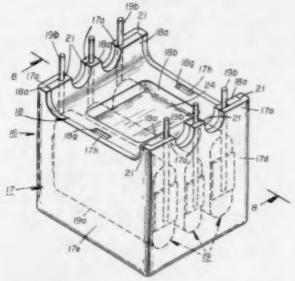
**3,838,316**

## ENCAPSULATED ELECTRICAL COMPONENT ASSEMBLY AND METHOD OF FABRICATION

**Donald R. Brown; John W. Linsley, Jr., both of Downers Grove, and Robert F. Porod, Cicero, all of Ill., assignors to Western Electric Company, New York, N.Y.**

**Filed Oct. 9, 1973, Ser. No. 404,821**
**Int. Cl. H05k** *5/06*
**U.S. Cl. 317—101 R** **14 Claims**



An encapsulated assembly of electrical components, such as capacitors, which can be mounted on a printed circuit board in straddling relationship to other components, includes an open mouth plastic shell and a plastic frame, each having opposed projecting standoff sections. The frame standoff sec-

tions are provided with grooves for receiving leads extending from electrical components assembled within the shell. Encapsulating liquid is introduced into the shell through an opening in the frame to submerge the bodies of the components and until the liquid wets the inner surface of the frame and flows by capillary action upward in passageways defined by the grooves in the frame and the standoff sections of the shell, to secure the leads in the passageways and to bond the frame to the shell. The encapsulating liquid also flows by capillary action upward between the side walls of the shell and the periphery of the frame to bond the frame to the shell, with the upper peripheral edges of the frame preferably depressed with respect to adjacent edges of the shell to prevent excess flow of the liquid over the sides of the shell.

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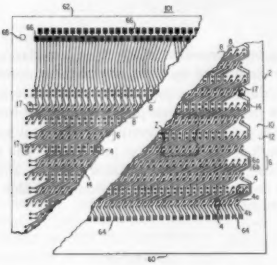
**3,838,317**

## CROSS CONNECT SWITCH

**James Christopher Coyne, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed July 12, 1973, Ser. No. 378,579**
**Int. Cl. H05k 5/00**
**U.S. Cl. 317—119** **19 Claims**



A cross connect switch utilizes diagonal conductors on a printed circuit board which wrap around the edges of the board or are fed through the board to provide two conductor segments on the two sides. These conductor segments interconnect pins in respective pin rows on the board so that each conductor is connected to pins which are adjacent pins connected to every other conductor on the board. Thus any conductors on the board can be cross connected by shorting appropriate pin pairs by a short connector. All conductors can be accessed along two edges of the board.

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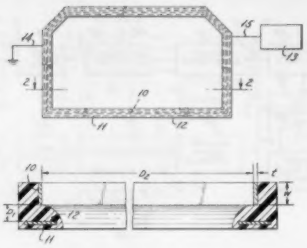
**3,838,318**

## ANTENNA ASSEMBLY FOR A CAPACITANCE-RESPONSIVE SAFETY DEVICE

**Robert Theodore Schmidt, Port Huron, and John Daniel Mulka, Warren, both of Mich., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Apr. 2, 1973, Ser. No. 347,213**
**Int. Cl. H01g 7/00**
**U.S. Cl. 317—246** **5 Claims**

An antenna assembly for a capacitance-responsive personnel safety device consists of an antenna formed by bending a ribbon of flat metal into a loop capable of defining a continuous capacitance field, the bending taking place across the width of the ribbon; a shield of the flat metal substantially coextensive with the antenna loop positioned in spaced relation with respect to the loop, the surface plane of the shield being perpendicular to the surface plane of the antenna ribbon; and a dielectric material such as an organic polymer embedding the antenna and shield and maintaining the spaced relation thereof.



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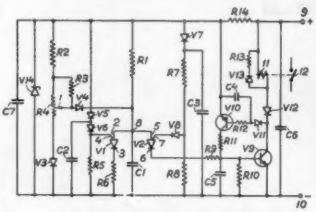
**3,838,319**

## TIME LAG RELAY WITH A SHORT RECOVERY TIME

**Gudmar Hammarlund, and Arne Johansson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden**

**Filed Nov. 12, 1973, Ser. No. 414,879**
**Claims priority, application Sweden, Nov. 10, 1972, 14572/72**
**Int. Cl. H01h 47/18**
**U.S. Cl. 317—141 S** **5 Claims**



An arrangement for achieving a short recovery time in a time lag relay, composed of static components in which the delay is determined by the charging time of a capacitor, includes two programmable unijunction transistors with the anode-cathode path in parallel with the capacitor and the control electrodes connected each to one voltage divider between the poles of the feeding voltage source. The voltage dividers are so designed and the control electrodes so connected to their voltage dividers that, during the charging of the capacitor, the voltage on the control electrode of the first transistor is higher than the voltage on the control electrode of the second transistor. If the charging process is interrupted before the relay has operated, the voltage on the control electrode of the first transistor falls more quickly than the voltage on the control electrode of the second transistor.

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**3,838,320**

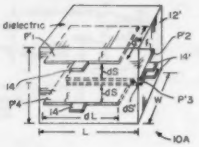
## MULTIPLE LAYER CAPACITORS

**Samuel J. Klein, Dix Hills, N.Y., assignor to American Technical Ceramics, a Division of Phase Industries, Inc., Huntington Station, N.Y.**

**Filed Jan. 4, 1974, Ser. No. 430,706**
**Int. Cl. H01g 3/07**
**U.S. Cl. 317—261** **12 Claims**

A multiple layer capacitor for use at high frequencies has a plurality of conductive plates or electrodes embedded in

spaced parallel disposition in a dielectric block. The capacitor has increased current handling capacity, higher Q and lower internal series resistance than conventional capacitors of the same size and capacitance due to arrangement of plates




between end plates as one or more closely spaced pairs. The spacing between plates of each pair is negligibly small as compared with the spacing between the pairs of plates and the end plates, and each of the pair of plates is connected to the same terminal.

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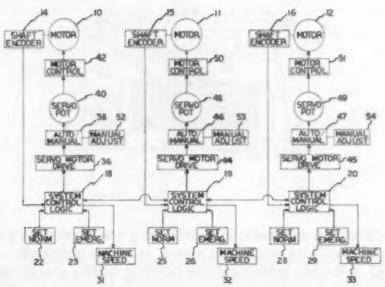
**3,838,321**

## SPEED CONTROL SYSTEM

**David A. Damm, Toledo, and Gerald F. Scherf, Holland, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio**

**Filed Oct. 24, 1973, Ser. No. 409,257**
**Int. Cl. H02p** *5/46, 5/00*
**U.S. Cl. 318—66** **41 Claims**




A motor speed control for a plurality of machines operating in parallel. In the inspection of glass containers, a group of containers are split into individual lines, three for example. Each line is fed to a separate inspection machine where identical inspection functions are performed. This invention is a control system for the electric motor drives of the inspection machines. The speed of all of the machines is monitored, and whenever any machine stops or falls below a minimum speed, the remaining machines are automatically increased in speed to an emergency speed. The remaining machines can operate fast enough to inspect all of the glass containers, which, under these circumstances, are divided into only two lines instead of three.

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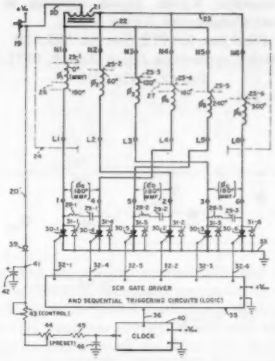
**3,838,322**

## INDUCTION MOTOR SYSTEM WITH CONSTANT HORSEPOWER

**Jack E. Greenwell, Reno, Nev., assignor to Lear Motor Corporation, Reno, Nev.**

**Division of Ser. No. 144,897, May 19, 1971. Pat. No. 3,753,062. This application Jan. 31, 1973, Ser. No. 328,062**
**Int. Cl. H02p** *5/40*
**U.S. Cl. 318—225 R** **10 Claims**

An electric induction motor/control system that provides the desirable high starting torque and wide speed characteristics of direct current motors. The stator of the induction motor has two specially interrelated winding sets per phase. The motor windings are supplied with unidirectional current pulses from silicon controlled rectifiers that are programmed to provide advantageous modes of operation for the motor. The unique relation and interaction between the motor windings hereof and the associated electronic circuitry results in high power factor, good efficiency, and self-clearing SCR commutation action. The preferred motors use a squirrel cage rotor with no commutator, brushes, or slip rings. The complementary stator winding arrangements are not voltage limited,




and thereby permit the construction of large power motor systems. Practical motor ratings are from fractional to over 500 horsepower, at speeds ranging from 600 to 40,000 rpm, and higher. The electronic control sections for even the high horsepower motors are operated at low voltage and with few watts. Control circuitry is provided that can operate the motor systems: (a) at constant output torque over a wide speed range; (b) at constant horsepower over a selected speed range; (c) with traction output characteristics similar to that of series motors; (d) at constant speed; (e) and with direct speed reversal in any of these modes. These motor systems require little maintenance, and may be hermetically sealed.

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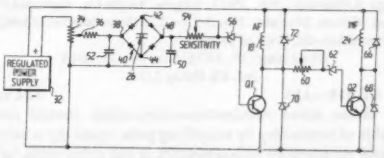
**3,838,323**

## EDDY CURRENT DYNAMOMETER SPEED CONTROL CIRCUIT AND METHOD

**Harold E. Anderson, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.**

**Filed Feb. 5, 1973, Ser. No. 329,400**
**Int. Cl. H02k** *49/00;* **H02p** *15/00*
**U.S. Cl. 318—302** **12 Claims**




An eddy current dynamometer speed control circuit includes transistors connected in series with the motor field coil and the absorbing field coil to control the current in the coils in a continuously variable manner to effect changes between a braking mode and a motoring mode responsively to dynamometer speed changes. The speed control circuit utilizes a regulated voltage onto which is impressed a tachometer signal having an amplitude related to the speed of the

dynamometer input/output shaft. Control voltages for the transistors are applied through Zener diodes each of which function as a threshold circuit to control the initial acceleration of the input/output shaft of the dynamometer and for causing a full motoring field to be applied responsively to abnormally large speed drops for quick recovery. A current sharing transistor circuit is also disclosed.

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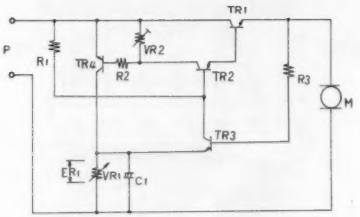
### 3,838,324
### SYSTEM FOR CONTROLLING THE ROTATIONAL SPEED OF A MICROMOTOR FOR USE IN MEDICAL INSTRUMENTS

**Yoshiaki Watanabe, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan**

**Filed Jan. 2, 1972, Ser. No. 303,128**
**Claims priority, application Japan, Nov. 9, 1971, 46-104806**
**Int. Cl. H02p** *5/16*
**U.S. Cl. 318—331** **6 Claims**




A system for controlling the rotational speed of a micromotor for use in medical instruments such as a dental handpiece comprises a first transistor connected in series between said motor and a source of electric energy; a second transistor Darlington-connected to said first transistor; a third transistor through which part of the base current of said second transistor flows; circuit means for supplying to said third transistor a base current from the terminal voltage of said motor; a fourth transistor to which part of the current flowing through said second transistor is applied as a base current; and a variable resistor through which both the current caused by the source voltage to flow through said fourth transistor and the current flowing through said third transistor flow, said variable resistor providing a reference voltage for setting the rotational speed of said motor to a predetermined value.

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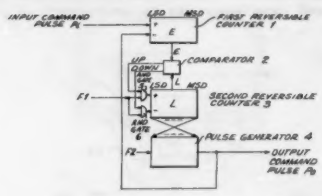
### 3,838,325
### MOTOR SPEED ACCELERATION-DECELERATION CONTROL CIRCUIT

**Kengo Kobayashi, No. 2937, Sugao, Tama-ku, Kawasaki-shi, and Mitsuo Manabe, No. 3-17-17, Minamimachi, Kichijoji, Musashino-shi, both of Japan**

**Filed Aug. 30, 1973, Ser. No. 393,048**
**Int. Cl. H02p** *5/16*
**U.S. Cl. 318—415** **12 Claims**

A motor speed acceleration-deceleration control circuit capable of controlling by smoothing pulse trains the accelerating and decelerating characteristics of the pulse trains in any mode of exponential, linear and/or changing from linear to exponential and simultaneously capable of exponentially controlling the accelerating characteristic and linearly controlling the decelerating characteristic comprises a first reversible counter which accumulates the command pulses. A second reversible counter reversibly counts pulses having a constant frequency. The reversible counting depends upon the output of a comparator which compares the contents in the first reversible counter with the contents of the second reversible counter. A pulse generator produces output pulses having a repetition frequency proportional to the contents of the




second reversible counter. The output pulses are fed back negatively to the subtraction input of the first reversible counter.

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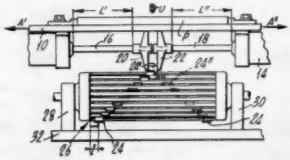
### 3,838,326
### MECHANICAL-HYDRAULIC INTERLOCKED DIGITAL CONTROLLED POSITIONING APPARATUS

**Beniamino Ferri, Via Rovani, 6, Monza, Italy**

**Filed Apr. 19, 1972, Ser. No. 245,569**
**Claims priority, application Italy, Apr. 21, 1971, 23450/71**
**Int. Cl. G05b** *19/24*
**U.S. Cl. 318—573** **13 Claims**




Method and apparatus for positioning a workpiece in a plurality of locations relative to a tool, in which a digitally controlled, rotatable indexing drum carrying axially spaced index projections about the periphery thereof is mounted to a frame and positioned such that a preselected one of the projections may be rotatably interposed between a pair of opposed extendible pushers mounted on a carriage movable relative to the frame. The drum is sequentially rotatably positioned in accordance with the preselected program, with the pushers actuated after each separate movement of the drum to shift the workpiece into the various desired positions relative to the tool.

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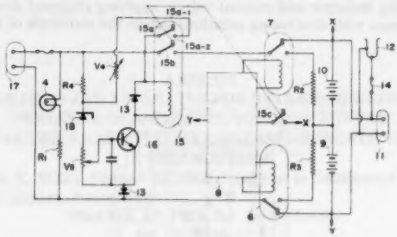
### 3,838,327
### BATTERY POWERED EQUIPMENT

**Sachio Uemichi; Kazuto Miyauchi, and Susumu Nakao, all of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Takatsuki City, Osaka Prefecture, Japan**

**Continuation of Ser. No. 185,686, Oct. 1, 1971, abandoned.**
**This application Aug. 20, 1973, Ser. No. 389,812**
**Int. Cl. H02j** *7/00*
**U.S. Cl. 320—2** **2 Claims**

Portable battery powered equipment capable of being charged from an automobile accessory terminal, such as a cigarette lighter jack, is provided with a main relay to open and close the self-contained charging circuit which is designed to be switched ON at a preset voltage. A circuit includes a switching member and a resistor connected in series to one another and connected in parallel with the coil of a main relay. Variable resistors are connected in parallel with or disconnected with the resistor depending on the ON-OFF operation

of the main relay. The charging operates such that an electric current flowing to the coil of the main relay is controlled to effect the OFF operation of the main relay when the battery cannot be substantially charged from an alternator or other external AC source.



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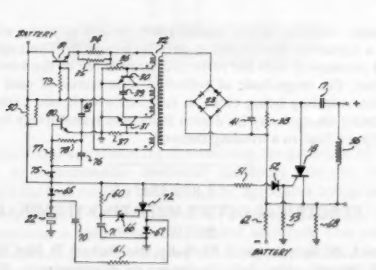
**3,838,328**

## CAPACITIVE DISCHARGE IGNITION SYSTEM

**Wilson T. Lundy, 14901 28th Ave. S.W., Burien, Wash. 98166**

**Filed Mar. 19, 1973, Ser. No. 342,467**
**Int. Cl. H02m** *3/28*
**U.S. Cl. 321—2** **10 Claims**



A capacitive discharge ignition system utilizing a silicone controlled rectifier to control the application of capacitively stored energy to the primary of an ignition coil. This energy, which is supplied by a DC-to-DC convertor network, is initially stored in a capacitor. The capacitor is then discharged through the primary ignition coil circuit at predetermined times under the control of the SCR. The SCR conduction state is positively controlled, allowing for multiple energy exchange cycles to occur if desired. The DC-to-DC convertor is turned off during the time that the SCR is conducting.

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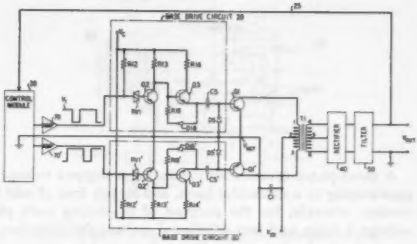
**3,838,329**

## POWER SUPPLY CIRCUIT

**Robert Wilson Michelet, Madison; Stephen Vincent Natale, New Providence, and David Edward Phillips, Hawthorne, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.**

**Filed May 21, 1973, Ser. No. 362,400**
**Int. Cl. H02m** *3/32*
**U.S. Cl. 321—2** **23 Claims**

In a power supply circuit, such as a converter or a switching regulator, forward and reverse drive current is alternately applied to the base of a power switching transistor by a base drive circuit which alternately drives the power transistor into and out of saturation. The forward drive current flows through a current switch and then a capacitor which is connected in series with the base of the power transistor. The forward drive current charges the capacitor and at the same time saturates the power transistor. In order to cut off the power transistor, and to reduce charge storage effects therein, a reverse drive current path is also provided which includes the capacitor, a second switch which, in one embodiment, controls the current switch, and a pair of diodes which bypass the power transistor and the current switch during the flow of reverse current. As long as the power transistor has excess charge stored in its base region, its emitter-base junction behaves as if it were forward biased and the reverse current will flow through the emitter-base junction of the power transistor. However, once the excess charge in the power transistor is depleted, its base-emitter junction becomes reverse biased and the discharge path is closed instead through the diodes. In another embodiment, the second switch located in the reverse drive path is controlled by the current switch located in the forward drive path rather than conversely.



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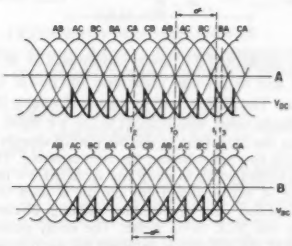
**3,838,330**

## ARRANGEMENT AND METHOD FOR CONVERTING ELECTRICAL POWER WITHOUT EXTERNAL SUPPLY OF REACTIVE POWER REQUIREMENTS

**John Rosa, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Apr. 13, 1973, Ser. No. 351,057**
**Int. Cl. H02m** *7/00*
**U.S. Cl. 321—5** **15 Claims**



In a system utlizing a naturally commutated converter to convert AC power to DC power (or to convert DC power to AC power), a force commutated converter is placed in parallel with the naturally commutated converter. The input power factor of the force commutated converter is set to compensate for the reactive power required by the naturally commutated converter. The input power factor of the force commutated converter is equal but of opposite sign with respect to the input power factor to the naturally commutated converter, which has an inherently lagging input power factor.

## 3,838,331
## THREE-PHASE INVERTER

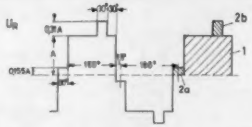
**Arne Jensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark**

**Filed Feb. 2, 1973, Ser. No. 329,104**

**Claims priority, application Germany, Feb. 19, 1972, 2207811**

**Int. Cl. H02m** *1/12, 7/52*

**U.S. Cl. 321—9 R** **9 Claims**




A three-phase inverter for producing a stepped voltage approximating to a sinusoidal form, and largely free of odd harmonics, wherein, for the purpose of producing each phase voltage a basic and two additional rectangular impulses are summed, the basic impulse being shortened in relation to a half-wave and occupying substantially the entire amplitude-time area of the phase voltage, and the additional impulses having a considerably smaller amplitude and shorter duration than the basic impulse. One of the additional impulses procedes and the other is superimposed on a basic impulse of the same polarity.

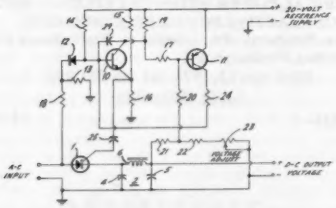
## 3,838,332
## LINE CONNECTED SCR REGULATOR

**Albert Hopengarten, Lafayette Hill, Pa., assignor to Philco-Ford Corportion, Blue Bell, Pa.**

**Filed July 30, 1973, Ser. No. 384,116**

**Int. Cl. G05f** *1/56*

**U.S. Cl. 321—18** **6 Claims**




A line connected d-c power supply uses an SCR to act as a rectifier and to provide regulation for power line and load variations. The SCR is fired by means of a pulse that is delayed by a suitable value with respect to the a-c input. The delay is such that the SCR fires in the interval of shortly ahead of the input peak to a point before the zero crossing. The SCR firing angle is varied so as to keep the rectified d-c output voltage constant. A Miller integrator circuit is used to provide the delay function and a bistable latching circuit is used to generate the SCR firing pulse. The delay period is made a function of the difference between the d-c output voltage and a reference voltage.

## 3,838,333
## STABILIZED INVERTER

**Walter Bernhard Guggi, Im Boden 265, 8172 Niederglatt, Switzerland**

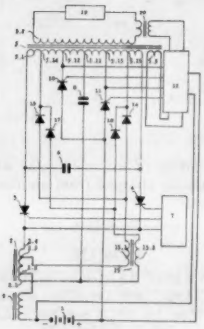
**Filed May 21, 1973, Ser. No. 362,312**

**Claims priority, application Switzerland, May 31, 1972, 8007/72; May 30, 1972, 8006/72; Sept. 13, 1972, 13648/72**

**Int. Cl. H02m** *7/48*

**U.S. Cl. 321—45 R** **6 Claims**

A stabilized inverter apparatus, capable of transforming direct current into alternating current, and particularly sine-like alternating current with low harmonic content, by means of trigger controlled current valves in conjunction with a double-tuned electrical LC-circuit means with a common capacitor, by feeding direct current from a source thereof through a tuning inductor and current valves, applying chopped direct current with alternating polarities across the terminals of the primary winding of the transformer, which primary winding has a capacitor connected in parallel herewith. The capacitor is in resonance with the reflected inductance of the tuning inductor, the magnitude of reflected inductance of said transformer winding being close to resonance with said capacitor, whereby energy may be drawn from said transformer by connecting a load to a winding thereof.



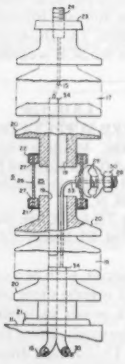
## 3,838,334
## ELECTRICAL DEVICE WITH TWO-TERMINAL BUSHING

**Gene L. Miller; James J. McNally, and Robert D. McClain, all of Bloomington, Ind., assignors to Westinghouse Electric Corportion, Pittsburgh, Pa.**

**Filed Mar. 29, 1971, Ser. No. 128,730**

**Int. Cl. H01b** *17/26*

**U.S. Cl. 323—93** **7 Claims**



An electrical device having a sealed casing with at least one two-terminal bushing in which two leads are brought out

through a single bushing to separate isolated terminal devices. The invention is particularly suitable for three-phase capacitor units with an isolated neutral terminal.

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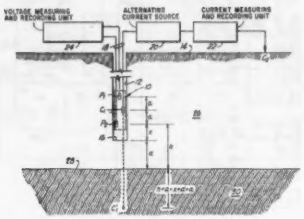
**3,838,335**

## METHOD AND APPARATUS FOR DETERMINING THE PRESENCE OF AND DEPTH TO A HORIZONTAL ELECTRICAL RESISTIVITY CONTRAST BENEATH THE EARTH SURFACE

**Dale E. Miller, Ponca City, Okla., assignor to Continental Oil Company, Ponca, Okla.**

**Filed Feb. 23, 1973, Ser. No. 335,436**
**Int. Cl. G01v 3/18**
**U.S. Cl. 324—10** **8 Claims**



Method and apparatus for determining the presence of and depth to a horizontal electrical resistivity contrast lying beneath the bottom of a borehole. The apparatus comprises a surface generator for applying a low frequency sinusoidal current between a long downhole current electrode unit and a distant surface current electrode. The apparatus further includes a voltage-measuring device for recording the resulting potential difference between two long downhole potential electrode units. The centers of the two long downhole potential electrode units are equally spaced several hundred feet above and below the long downhole current electrode unit, respectively. The exact spacing is chosen according to the desired depth of investigation. Another aspect of the apparatus is that the length of each downhole current and potential electrode unit is made equal to about one-tenth the chosen vertical electrode spacing. The method includes measuring the amplitude of the potential difference measured between the two long downhole potential electrode units and displaying in a log-log plot the potential difference over the low frequency sinusoidal current versus the difference of the electrode array above the bottom of the borehole and determining therefrom the distance from the bottom of the borehole to the level of electrical resistivity contrast.

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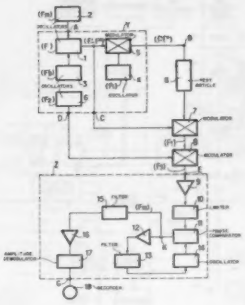
**3,838,336**

## APPARATUS FOR MEASURING THE GROUP PROPAGATION TIME IN A QUADRIPOLE

**Claude Aillet, Lannion, France, assignor to Societe Lannionnaise D'Electronique Sle-Citerel, Lannion, France**

**Filed Apr. 9, 1973, Ser. No. 349,631**
**Claims priority, application France, Apr. 7, 1972, 72.12356**
**Int. Cl. G01r 27/00**
**U.S. Cl. 324—57 R** **4 Claims**

Apparatus for measuring the group propagation time in a quadripole in dependence on the drivation of the phase curve with respect to the pulsation, this derivation being carried out automatically by sweeping the carrier frequency between



limits in combination with a frequency modulation of the carrier frequency.

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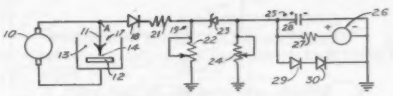
**3,838,337**

## PULSE UTILIZATION INDICATION CIRCUIT

**Joseph F. Halbleib, Neshanic Station, N.J., assignor to John B. Sowell, Ardmore, Pa., a part interest**

**Filed July 12, 1973, Ser. No. 378,406**
**Int. Cl. G01n 27/00; B23k 9/10**
**U.S. Cl. 324—71 R** **13 Claims**



A circuit for indicating the percentage utilization of pulses being applied to a utilization device which includes means for sensing the voltage levels which occur during pulse utilization and non-utilization and means for indicating the proportional number of pulses being utilized.

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**3,838,338**

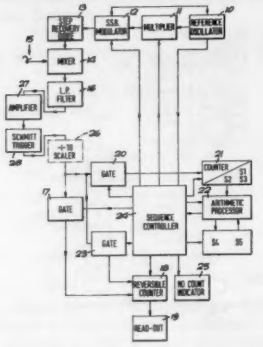
## FREQUENCY MEASUREMENTS

**Khalil Ibrahim Khoury, Bodmin, England, assignor to Flann Microwave Instruments Limited, Bodmin, Cornwall, England**

**Filed Oct. 9, 1973, Ser. No. 404,206**
**Int. Cl. G01r 23/14**
**U.S. Cl. 324—79 D** **20 Claims**

This invention relates to a method of and an apparatus for automatically measuring the frequency of an input signal, particularly where the frequency of the signal to be measured lies above the upper limit of direct-counting frequency counters. The input signal to be measured is mixed simultaneously with a first reference signal and a number of consecutive harmonics thereof. A lowest beat frequency is extracted from the resulting beat frequencies. In order to obtain a value for the number of the nearest harmonic and to determine whether the input signal lies above or below this nearest harmonic, the first reference signal is increased and decreased by a known increment to obtain respective further lowest beat frequencies. The set of lowest beat frequencies is processed to compute the value of the frequency of the input signal. There are regions midway between adjacent harmonics where input signals cannot be measured, and thus to provide a continuous measurement range including these regions and also to provide a check on a measurement obtained with respect to the first

reference signal, a further reference signal is used instead of the first reference signal and the measurement procedure is



performed with another set of lowest beat frequencies. If required, further reference signals may be used to extend the measurement range.

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**3,838,339**

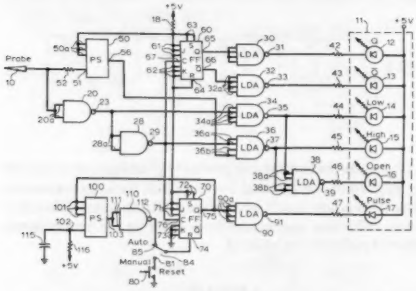
**LOGIC TEST PROBE AND INDICATOR CIRCUIT**

**William F. Brandt, Des Plaines, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake Ill.**

**Filed Aug. 17, 1973, Ser. No. 389,417**

**Int. Cl. G01r** *19/16, 31/02*

**U.S. Cl. 324—133** **10 Claims**



A test circuit for detecting low, high and open voltage levels, and dynamically changing voltage levels in a digital circuit includes a display panel and a probe provided with a plurality of indicators for signalling each of the possible level conditions sensed by the probe. The circuit also includes a current detecting circuit for providing an unambiguous indication when an open level is present. A pair of indicators provide information of the presence of dynamically changing levels while low and high level indicators provide information by way of duty cycles of the shape of the dynamic wave-form. An indicator is also provided for giving a sustained indication when an unexpected level change takes place and includes means for automatically resetting itself.

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**3,838,340**

**DIRECT READING WATTMETER FOR MEASURING THE TRUE WATTS POWER CONSUMPTION OF AN A.C. CIRCUIT**

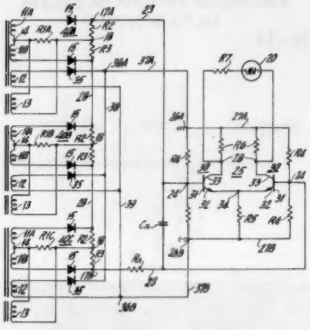
**Raymond H. Legatti, 1567 Alexander Rd., Clearwater, Fla. 33516**

**Filed June 11, 1973, Ser. No. 369,060**

**Int. Cl. G01r** *21/00, 29/16*

**U.S. Cl. 324—142** **10 Claims**

The wattmeter includes a potential transformer having a primary winding connected across a phase of an a.c. circuit and having a first center-tapped secondary winding and a second secondary winding. The first secondary winding is included in a full wave rectifying bridge further including a pair of series-connected bridge resistors connected across the terminals of the first secondary winding, diodes, and a terminal resistor of a current transformer in the associated phase. The terminal resistor is connected between the center tap of the first secondary winding and the junction point of the bridge resistors, and constitutes the diagonal of the bridge circuit. A differential amplifier has an input connected across the series-connected bridge resistors, and an indicating meter is connected across the output of the differential amplifier. A



second secondary winding of the potential transformer is connected, through a diode or diodes, to the differential amplifier to provide a d.c. operating voltage across the amplifier. When used in a polyphase a.c. circuit, respective full wave rectifying bridge circuits are provided for each phase, and all of the pairs of series-connected bridge resistors are connected in series with each other. In this case, the input of the differential amplifier is connected across all of the series-connected bridge resistors. The differential amplifier includes a pair of transistors and associated circuitry, with the input circuit being connected to the bases of the two transistors and the indicating meter being connected between the two outputs of the transistors.

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**3,838,341**

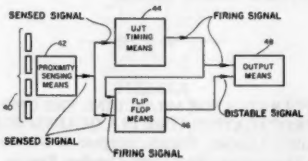
**UNDERSPEED/OVERSPEED DETECTOR**

**Donald Joseph Gaines, Lena, Ill., assignor to Honeywell, Inc., Minneapolis, Minn.**

**Filed Jan. 2, 1973, Ser. No. 319,972**

**Int. Cl. G01p** *3/56*

**U.S. Cl. 324—161** **3 Claims**



A detection system for determining unacceptable deviations from a desired spacing pattern in the passage of articles past a station.

## 3,838,342
## A SWITCHED FREQUENCY COMMUNICATIONS SYSTEM WITH AUTOMATIC PHASE AND AMPLITUDE COMPENSATION

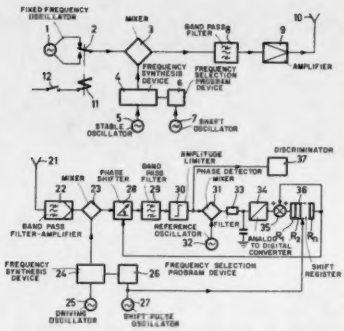
**Bengt Harry Bjorkman, Skalby, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Dec. 22, 1970, Ser. No. 100,684**

**Claims priority, application Switzerland, Dec. 23, 1969, 17909/69**

**Int. Cl. H04k** *1/04*

**U.S. Cl. 325—32** **4 Claims**




A communications device consisting of a transmitter that produces a phase modulated signal that is switched to a plurality of different frequencies according to a preselected program, and a receiver that mixes the received signal with a sequence of frequencies equal to the transmitted frequencies plus or minus a fixed intermediate frequency. In order to compensate for the different phase shifts produced by the interaction of the different transmitted frequencies with various fixed obstructions the phase of the intermediate frequency in the receiver corresponding to each transmitted frequency is measured, compared with a fixed phase reference oscillator and stored. The stored phase information relating to each transmitted frequency is used to control a phase shifter in the receiver during subsequent transmissions of the corresponding frequency, thereby completing a phase correction control loop. A similar comparison, storage, and control feedback loop is used in conjunction with an AVC amplifier in order to individually control the amplitude of each received frequency.

## 3,838,343
## BROADBAND CABLE COMMUNICATIONS SYSTEM

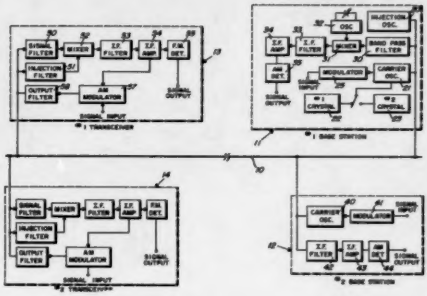
**Richard Yactor, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.**

**Filed Mar. 15, 1973, Ser. No. 341,425**

**Int. Cl. H04b** *3/02*

**U.S. Cl. 325—58** **9 Claims**

Continuously operating injection and carrier oscillators attached to a broadband cable with means for data modulating the carrier oscillator and a transmitter/receiver attached to the cable remotely from the carrier oscillator and including means for picking off the carrier frequency and means for picking off the injection frequency and mixing the two to provide an IF signal which may be demodulated to retrieve the data or modulated by data and transmitted back along the cable for two-way communications.



## 3,838,344
## FREQUENCY MULTIPLYING CIRCUIT

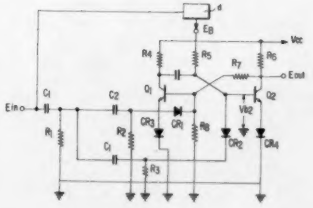
**Kenji Tanimoto, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan**

**Filed Dec. 20, 1972, Ser. No. 316,753**

**Claims priority, application Japan, Dec. 23, 1971, 46-104092**

**Int. Cl. H03b** *19/00*

**U.S. Cl. 328—20** **10 Claims**

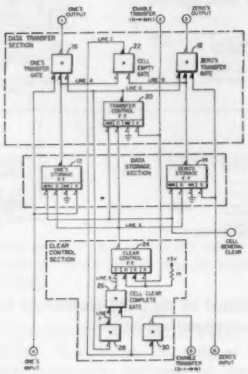



Frequency multiplying circuitry comprising monostable multivibrator means responsive to a pulse train for multiplying the frequency thereof; frequency demodulating means responsive to the pulse train for developing a control voltage, the magnitude of which is proportional to the frequency of the pulse train; and means for applying the control voltage to the monostable multivibrator for varying the length of time it remains in its unstable state; whereby the length of time the multivibrator remains in its unstable state is inversely proportional to the frequency of the pulse train.

## 3,838,345
## ASYNCHRONOUS SHIFT CELL

David T. Schneider, Hatfield, Pa., assignor to Sperry Rand Corporation, Blue Bell, Pa.

Filed May 25, 1973, Ser. No. 363,909
Int. Cl. G11c *19/00*
U.S. Cl. 328—37 4 Claims

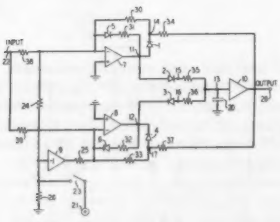


There is disclosed herein a new internal cell construction wherein a plurality of such cells may be connected in series for use in an asynchronous binary shift register.

## 3,838,346
## BIPOLAR SAMPLE AND HOLD CIRCUIT WITH LOW-PASS FILTERING

Donald Clyde Cox, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 1, 1973, Ser. No. 411,630
Int. Cl. H03k *17/00*
U.S. Cl. 328—151 10 Claims

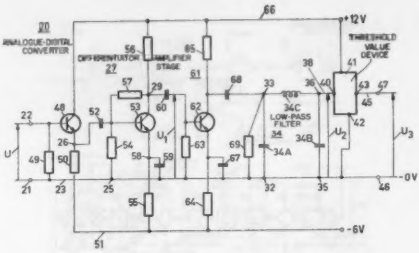


A sample and hold circuit is disclosed which is directly responsive to a bipolar signal without the necessity for d.c. offset. The circuit is designed to be readily integrated and therefore contains neither inductors nor transformers. Leakage of a holding capacitor is blocked during a hold pulse by four reverse-biased diodes and a high input impedance device. When the circuit is tracking and the slope of the input signal is positive, a specified two of the four diodes are conducting and the other two are nonconducting. When the slope of the input signal is negative, the specified two diodes are nonconducting and the other two diodes are conducting. Low-pass filtering is incorporated into the circuit by a resistive arrangement in association with the holding capacitor.

## 3,838,347
## APPARATUS FOR TRANSFORMING A DETERIORATED INPUT SIGNAL INTO A BINARY SIGNAL

Hermann Lauffer, Hombrechtikon, Switzerland, assignor to Zellweger AG, Uster, Switzerland

Filed Jan. 27, 1972, Ser. No. 221,241
Claims priority, application Switzerland, Mar. 24, 1971, 4407/71
Int. Cl. H03k *5/08*
U.S. Cl. 328—164 8 Claims

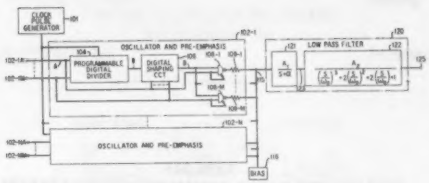


A method of, and apparatus for, converting an analogue signal into a binary signal wherein the analogue signal is differentiated as a function of time, and a second analogue signal which is proportional to the derivative or first differential quotient as a function of time of the first analogue signal is formed from the differentiated signal. The second analogue signal is compared both with a positive as well as with a negative threshold value, and during the time of exceeding the positive threshold value until exceeding the negative threshold value there is formed a first type of binary signal and during the remaining time a second type of binary signal. If desired, the first and second analogue signals may be amplified.

## 3,838,348
## DIGITAL MULTIFREQUENCY SIGNAL GENERATOR

David August Pezzutti, Eatontown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 25, 1973, Ser. No. 373,426
Int. Cl. H03b *1/04*
U.S. Cl. 328—167 16 Claims

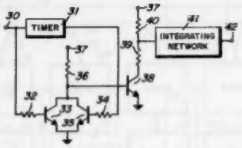


Tone signals are generated at selected frequencies by employing a programmable digital divider in conjunction with a low-pass filter. Transient signal components are minimized by selectively shaping and biasing the divider output. Pre-emphasis of the divider output amplitude at the frequencies of interest allows use of simplified filter arrangement.

## 3,838,349
## BAND LIMITED FM DETECTOR

**Douglas W. Nickerson, Hoffman Estates, Ill., assignor to Motorola, Inc., Chicago, Ill.**

**Filed June 1, 1973, Ser. No. 365,920**
**Int. Cl. H03c** *3/02, 3/18*
**U.S. Cl. 329—103** **5 Claims**

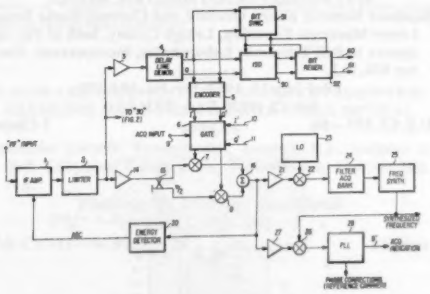



The output IF signal of an FM receiver is coupled to a coincidence gate, including a pair of transistors having common connected collectors and emitters, and also used to actuate a timer which provides a positive output pulse for each positive going excursion of the FM signal. The timer output is coupled to a second input of the coincidence gate and the gate provides an output when both of the applied signals are low. This signal is then applied to an inverter to provide a signal which has a relatively high duty cycle and which, after passing through a low pass filter, varies in direct proportion to the frequency of the IF signal.

## 3,838,350
## DIFFERENTIAL ENCODED QUADRIPHASE DEMODULATOR

**Walter Ewanus, Ellicott City, and Donald B. McKone, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Filed Aug. 4, 1972, Ser. No. 277,933**
**Int. Cl. H04l** *27/22*
**U.S. Cl. 329—104** **19 Claims**

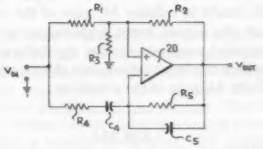


Coherent demodulation of differentially encoded quadriphase modulation is accomplished using initially a non-optimum passive delay line detector to derive a carrier component. The output of the delay line demodulator, comprising I and Q channel data of less than desirable error performance, is differentially encoded for correlation with the original quadriphase modulation resulting in reconstruction of the suppressed carrier frequency. The reconstructed carrier is supplied to a filter bank and frequency synthesizer for generating a synthesized carrier frequency. The synthesized frequency and the reconstructed carrier are supplied to a phase-lock loop which generates phase correction signals. The synthesized frequency is mixed with the original modulation and the resulting signal is supplied to coherent phase detectors, the latter also receiving the phase correction signals from the phase-lock-loop, and serving to optimally demodulate the quadriphase components, yielding I and Q data channels. Efficiency of demodulation is improved further by employing the phase detector acquired I and Q data for reconstruction of the carrier frequency, instead of the initial delay line demodulator source. Matched filter components, comprising bit synchronization and bit regeneration circuitry process the demodulator outputs and contribute accordingly to requirements for minimum error demodulation. Another measure of improved demodulation performance is afforded by weighted comparison of the redundant I and Q channels of data of the delay line demodulator and the coherent phase detectors.

## 3,838,351
## ACTIVE NOTCH FILTER AND DUAL MODE FILTER/OSCILLATOR

**Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.**

**Continuation-in-part of Ser. No. 178,108, Sept. 7, 1971, abandoned. This application July 13, 1973, Ser. No. 378,888**
**Int. Cl. H03f** *3/68*
**U.S. Cl. 330—104** **9 Claims**

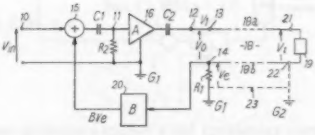


A high-Q active notch filter includes only one operational amplifier employing resistive positive feedback and reactive negative feedback. The positive feedback resistance can be selectively changed to convert the notch filter to an oscillator operating at the notch frequency.

## 3,838,352
## LINE OUTPUT CIRCUITS

**Ray Milton Dolby, and Bjorn Erik Edvardsen, both of London, England, assignors to Dolby Laboratories, Inc., New York, N.Y.**

**Filed June 25, 1973, Ser. No. 373,165**
**Claims priority, application Great Britain, June 29, 1972, 30541/72**
**Int. Cl. H03f** *1/26*
**U.S. Cl. 330—105** **12 Claims**



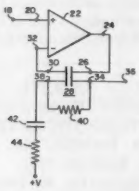
A line, noise-cancelling output circuit is created without the use of a transformer by detecting the error voltage between the voltages at the input and output ends of the line driven from the circuit. The error voltage is applied to the line output circuit amplifier to establish a positive feedback loop of gain equal to a slightly greater than unity. The error voltage can be derived across a resistor connected between the earthy output terminal of the line output circuit and ground.

## 3,838,353

### AMPLIFIER WITH FAILSAFE PREDERTERMINED GAIN

Thomas C. Matty, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 15, 1973, Ser. No. 388,519
Int. Cl. H03f 1/36
U.S. Cl. 330—107 4 Claims



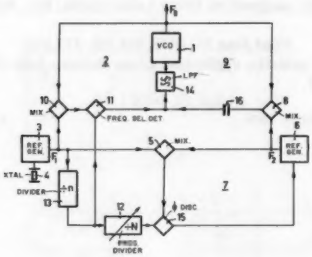
An amplifier in which the feedback impedance includes a four terminal capacitor, and in which the input impedance is connected to a source of operating potential. The use of a four terminal capacitor as a feedback element compensates for the failure mode of the amplifier in which the opening of the feedback element results in infinite AC gain of the amplifier. The connection of the signal input impedance to a source of operating potential compensates for the failure mode of the amplifier in which the input impedance shorts, which normally results in infinite AC gain of the amplifier.

## 3,838,354

### FREQUENCY SYNTHESIZER HAVING THREE CONTROL LOOPS

Eduard Herman Hugenholtz, Toronto, Ontario, Canada, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 232,119, March 6, 1972, abandoned. This application July 30, 1973, Ser. No. 383,896
Claims priority, application Canada, Apr. 23, 1971, 111140
Int. Cl. H03b 3/04
U.S. Cl. 331—4 8 Claims



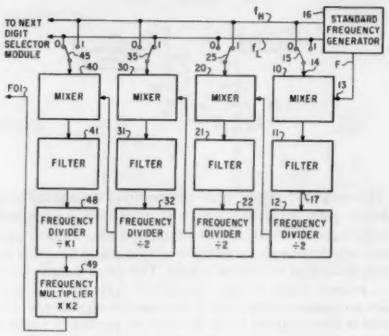

A frequency synthesizer has a voltage-controlled oscillator whose output frequency is locked with the aid of a first control loop in relationship to a harmonic of the output signal from a first reference pulse generator. A second reference pulse generator is part of a second control loop which stabilizes the frequencies of the output signals from said first and second reference pulse generators with respect to each other on an adjustable constant difference frequency. A third control loop disturbs the locking of the oscillator when it is locked to a frequency which is not a harmonic of the output signal from said second reference pulse generator.

## 3,838,355

### BINARY CODED DIGITAL FREQUENCY SYNTHESIS

Robert J. Papaieck, Colts Neck, N.J., assignor to Cutler Hammer, Inc., Milwaukee, Wis.

Filed July 23, 1973, Ser. No. 381,980
Int. Cl. H03b 21/02
U.S. Cl. 331—39 6 Claims




Any one of a group of discrete frequencies, each offset from a starting frequency by a respective number of predetermined fixed frequency intervals, is generated selectively using only two driving frequencies, chosen in a sequence according to a binary coded representation of the number corresponding to the selected frequency.

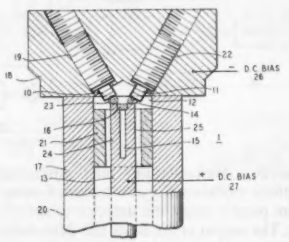
The synthesis is readily adaptable to various numerical radices, and to any number of digital orders by an iterative technique realizable with a cascade arrangement of identical modules.

## 3,838,356

### PARALLEL CONNECTED DIODE DEVICE WITH SUPPRESSION OF ASYMMETRIC MODES

Reinhard Heinrich Knerr, Orefield, and Clarence Burke Swan, Lower Macungie Township, Lehigh County, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 31, 1973, Ser. No. 384,379
Int. Cl. H03b 7/14; H03f 3/10
U.S. Cl. 331—56 7 Claims



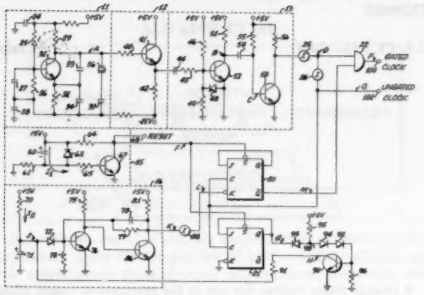

When a plurality of negative resistance packaged diodes are connected in electrical parallel and placed in a single resonant cavity, undesired asymmetric modes of oscillation result unless the diodes act cooperatively as a unit. Slots are positioned to open into the cavity and resistive elements are placed in the vicinity of the slot opening to suppress electric field energy associated with these asymmetric modes. Alternatively, lossy magnetic material, such as ferrite, can be placed in the slots to absorb magnetic field energy associated with the assymmetric modes, thereby suppressing these modes.

## 3,838,357

### APPARATUS FOR USING START-UP OF A CRYSTAL OSCILLATOR TO SYNCHRONIZE POWER TURN-ON IN VARIOUS PORTIONS OF A SYSTEM

Robert P. Billeg, Jr., Oklahoma City, Okla., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Oct. 25, 1973, Ser. No. 409,532
Int. Cl. H03k *17/26*
U.S. Cl. 331—74 4 Claims



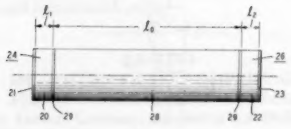
A pair of timing circuits, a pair of flip-flops, a crystal oscillator and a logic circuit provide a first group of signals while oscillations are building up and a second group of signals after oscillations have built up in the crystal oscillator. The timing circuits provide initializing signals for a computer processor when electrical power is initially turned on. The timing circuits also provide a minimum time delay between application of electrical power to the oscillator and the development of the second group of signals. The oscillator provides timing pulses or master clock pulses for the computer processor after the oscillator has stabilized.

## 3,838,358

### LASER ARRANGEMENTS INCLUDING CATADIOPTRIC ELEMENTS MADE FROM GRADED-INDEX OPTICAL FIBERS

Johannes Cornelis Vanderleeden, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 30, 1973, Ser. No. 355,968
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 2 Claims



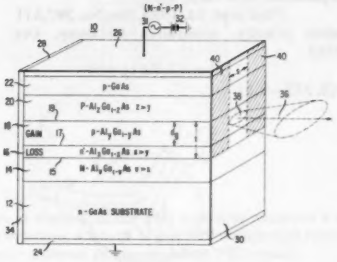
A catadioptric element (which is equivalent in effect to a spherical mirror) is made by depositing a high-reflectivity coating on one of the flat ends of a cylindrical segment of a graded-index optical fiber. All of the usual laser configurations requiring cavity-defining spherical mirrors can be constructed by using one or two such segments.

## 3,838,359

### GAIN ASYMMETRY IN HETEROSTRUCTURE JUNCTION LASERS OPERATING IN A FUNDAMENTAL TRANSVERSE MODE

Basil Wahid Hakki, Summit, N.J., and Cherng-Jia Hwang, Palo Alto, Calif., assignors to Bell Telephone Laboratories, Murray Hill, N.J.

Filed Nov. 23, 1973, Ser. No. 418,572
Int. Cl. H01f *3/00*
U.S. Cl. 331—94.5 H 20 Claims



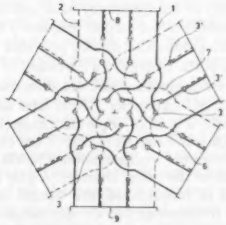

Fundamental transverse mode, high power pulsed operation is achieved in a double heterostructure junction laser which includes a third junction located within the waveguide so as to define a lossy region and a gain region, the latter being preferably twice as thick as the former. The invention is characterized in that (1) the third junction is a heterojunction which provides a barrier of at least 2kT approximately in order to reduce minority carrier injection into the lossy region, but not so high as to introduce a change in refractive index large enough to excite a higher order mode in the gain region (2) the majority carrier concentration in the lossy region is equal to or greater than the electron concentration in the gain region under lasing conditions, (3) at least one of the three heterojunctions is a p-n heterojunction, and (4) the thickness of $d_a$ of the gain region satisfies the condition $\delta n\, d_a^2 < 9\lambda^2/32n$ in order that a first order mode is not excited in the gain region, where $\delta n$ is the refractive index step at the third heterojunction, $\lambda$ is the free space wavelength of the laser, and $n$ is the refractive index of the gain region.

## 3,838,360

### JUNCTION CIRCULATOR HAVING CURVED CONDUCTORS ON OPPOSITE SIDES OF PRINTED CIRCUIT BOARD

Friedrich Potzl, Rellingen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 17, 1973, Ser. No. 397,663
Claims priority, application Germany, Oct. 6, 1972, 2249179
Int. Cl. H01p *1/32*
U.S. Cl. 333—1.1 4 Claims



A circulator, comprising conductors which are provided between opposite connection terminals on an insulated plate.

The conductors are situated partly on one side of the plate and partly on the other side of the plate, the parts being interconnected through passages in the plate and having a non-linear shape so as to provide a higher conductor density per unit of surface area of the plate.

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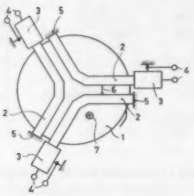
**3,838,361**
**STRIP-LINE CIRCULATOR FOR THE FREQUENCY RANGE FROM 10 TO 1,000 MHz**

**Friedrich Potzl, Rellingen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed Sept. 14, 1973, Ser. No. 397,611**
**Claims priority, application Germany, Oct. 6, 1972, 2249180**
**Int. Cl. H01p 1/32**
**U.S. Cl. 333—1.1** **3 Claims**



The strip-line circulator comprises three coplanar conductors bent about 120° and symmetrically arranged in a spaced relationship from one another about a common central area on a gyromagnetic coupling disc.

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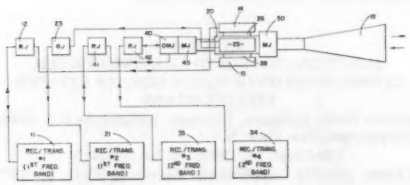
**3,838,362**
**DIPLEXING COUPLER FOR MICROWAVE SYSTEM**

**Louis A. Kurtz, Woodland Hills, Calif., assignor to Emerson Electric Co., St. Louis, Mo.**

**Filed June 29, 1973, Ser. No. 374,981**
**Int. Cl. H01p 1/06, 1/16, 5/12**
**U.S. Cl. 333—9** **12 Claims**



A coupler is described for coupling two microwave transmitters or receivers in one frequency band and two microwave receivers or transmitters in a second frequency band to a common central wave guide. The device provides high isolation between the four ports. Energy in a first band of frequencies is coupled to feed wave guides which are dimensioned to transmit this first band of frequencies. These feed wave guides are arranged to handle a pair of separate channels for the first band of frequencies, the signals in one of the channels having the same frequencies but a polarization which is orthogonal to that of the signals of the other channel. A pair of channels in the second band of frequencies, the signals in one channel having the same frequencies but a polarization orthogonal to that in the other channel, may be fed directly to the central wave guide. A branch wave guide is interposed between each of the feed wave guides and the central wave guide for coupling the energy in the first band of frequencies to the central waveguide, the branch wave guides being dimensioned to operate as a cutoff filter at the second band of frequencies (thus preventing such signals from entering the feed wave guides) and a high pass filter at the first band of frequencies.

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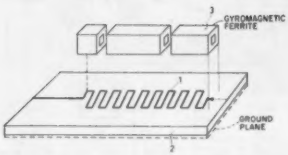
**3,838,363**
**PLANAR PHASE SHIFTER FOR USE IN THE MICROWAVE RANGE**

**Wolfram Schilz, Norderstedt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

**Filed May 29, 1973, Ser. No. 364,521**
**Claims priority, application Germany, June 19, 1972, 2229668**
**Int. Cl. H01p 1/32**
**U.S. Cl. 333—24.1** **3 Claims**




A planar phase shifter for use in the microwave range which comprises a meander-like microstrip conductor which is provided on a non-magnetic ferrite substrate, and a gyromagnetic body being provided at a distance from the microstrip conductor to reduce attenuation of the microwave due to losses in the gyromagnetic material.

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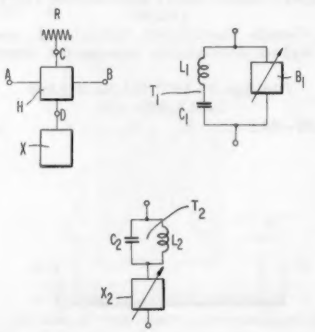
**3,838,364**
**VARIABLE DELAY EQUALIZER COMPRISING HYBRID NETWORK TERMINATED BY TUNED AND VARIABLE REACTANCE CIRCUITS**

**Teruhisa Kurokawa, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan**

**Filed Dec. 20, 1973, Ser. No. 426,754**
**Claims priority, application Japan, Dec. 23, 1972, 47-1016**
**Int. Cl. H03h 7/14; H04b 3/04**
**U.S. Cl. 333—28 R** **6 Claims**




A delay equalizer for equalizing the relative delays of a band of frequencies without altering the absolute delay of a center frequency. The delay equalizer includes a hybrid circuit having input, output and two side branches. One of the side branches is terminated in its characteristic impedance. The other is terminated by a circuit which consists of a tuned LC circuit and a variable reactance circuit. Variation in the

reactance of the variable reactance circuit alters the delays of all frequencies except the resonant frequency of the tuned circuit.

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**3,838,365**

**ACOUSTIC DEVICES USING AMORPHOUS METAL ALLOYS**

**Michel Dutoit, Parsippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.**

**Filed Feb. 5, 1973, Ser. No. 329,935**

**Int. Cl. H03h 9/30; H01v 7/02**

**U.S. Cl. 333—30 R** **12 Claims**

Amorphous metal alloys are employed in acoustic devices dependent upon the properties of low acoustic velocity and low attenuation. Such devices include wire, strip and bulk delay lines.

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**3,838,366**

**MONOLITHIC ELECTRO-MECHANICAL FILTERS**

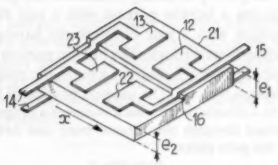
**Gerard J. Coussot, Paris, France, assignor to Thomson-CSF, Paris, France**

**Filed May 18, 1973, Ser. No. 361,617**

**Claims priority, application France, May 24, 1972, 72.18485**

**Int. Cl. H03h 9/26; H01v 7/00**

**U.S. Cl. 333—72** **6 Claims**




The present invention relates to monolithic electro-mechanical filters comprising coupled resonators obtained by the deposition of electrodes upon a piezoelectric wafer. In accordance with the present invention, there is provided an electro-mechanical filter wherein the coupled resonators in two collateral transmission paths, have mutually different resonance frequencies; a step being provided in the wafer, between said transmission paths.

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**3,838,367**

**MICROSTRIP FILTER COMPRISING A FERROMAGNETIC RESONANT BODY**

**Hans Bex, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.**

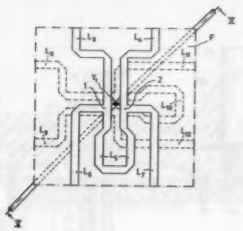
**Filed Oct. 23, 1973, Ser. No. 408,512**

**Claims priority, application Netherlands, Nov. 4, 1972, 7214941**

**Int. Cl. H01p 1/20**

**U.S. Cl. 333—73 S** **1 Claim**

A YIG crystal filter, notably for use in mixing circuits, by means of which, in addition to a frequency separation, a separation of even and odd waves on a double line can be realized. According to the invention, the transmission properties are substantially improved by interconnecting points of the



double line at the area of the YIG crystal by means of a transmission line having a length of one half wavelength related to the magnetic resonant frequency of the YIG crystal.

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**3,838,368**

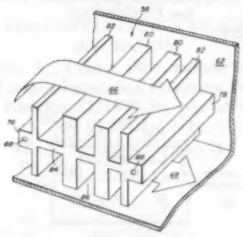
**WAVEGUIDE FILTER FOR MICROWAVE HEATING APPARATUS**

**Richard Ironfield, Williamsburg, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa**

**Division of Ser. No. 262,396, June 13, 1972. This application May 10, 1973, Ser. No. 359,031**

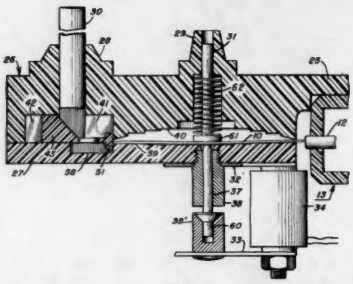
**Int. Cl. H01p 1/20**

**U.S. Cl. 333—73 W** **8 Claims**



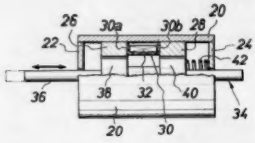
A low pass filter is provided for rectangular waveguide of the type employed for launching electromagnetic energy in microwave ovens. The filter substantially rejects the transmission of harmonic frequencies of the fundamental generator operating frequency as well as adjacent energy oscillation modes. The structure described has a corrugated configuration with ribs defining alternate cavities and constrictions having cutoff frequency characteristics. Uniform and nonuniform spacing as well as dissilimar sections are discussed. The structure is electrically isolated from the broad waveguide walls to define two propagation paths for the electromagnetic energy. Lightweight conductive materials are suggested. The interrelationships of the alternating rib members provide a series of open and short circuit admittances which are analyzed to determine the desired electrical cutoff frequencies. Identical rib structure is defined on opposing sides of a reference plane extending along the longitudinal axis of the waveguide. Transforming means are utilized for impedance matching.

3,838,369
OVERLOAD RELAY
Fredric D. Fogle, Mendham, N.J., assignor to Q.V.S. Inc., East Orange, N.J.
Filed Nov. 28, 1973, Ser. No. 419,682
Int. Cl. H01h 5/20
U.S. Cl. 335—188 8 Claims



An overload relay including a switch actuated by a metal reed which is prestressed into an initial bowed configuration and normally maintained under axial pressure, said reed snapping into a reversely-bowed configuration upon the application of a relatively small force applied intermediate the ends thereof.

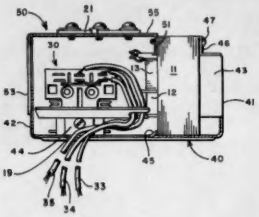
3,838,370
SOLENOID MAGNET
Toshio Ueno, and Yuzuru Konakawa, both of Tokyo, Japan, assignors to Kabushiki Kaisha Akuto Giken, Tokyo, Japan
Filed Aug. 30, 1973, Ser. No. 393,041
Claims priority, application Japan, Sept. 2, 1972, 47-88147
Int. Cl. H01f 7/08
U.S. Cl. 335—255 10 Claims



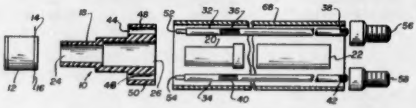
The armature of an electromagnet moves axially in two coaxial, annular pole pieces axially separated by the coil of the magnet when the coil is energized. In another electromagnet, radially projecting pole pieces of a rotor may be aligned simultaneously with corresponding pole pieces equiangularly spaced on the stator against the restraint of a return spring when the stator pole pieces are excited by an energized coil.

3,838,371
MOUNTING ASSEMBLY FOR A TRANSFORMER AND RELAY CONTROL DEVICE
Merton J. Willette, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 14, 1974, Ser. No. 442,980
Int. Cl. H01f 7/00
U.S. Cl. 335—278 9 Claims

A simplified and cost reduced mounting plate and cover are provided for a transformer and relay normally used in the heating and cooling control industry. A mounting plate with an integral end bell for the transformer mounts the transformer and relay so that a second member can be placed over a portion of the transformer and the relay to form a complete housing or enclosure.



3,838,372
MAGNETIC PICKUP ASSEMBLY
Algis Damijonaitis, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation of Ser. No. 193,838, Oct. 29, 1971, abandoned.
This application Oct. 15, 1973, Ser. No. 406,589
Int. Cl. H01f 27/28
U.S. Cl. 336—110 6 Claims



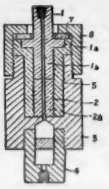
A magnetic pickup assembly includes a one-piece mounting member having a bobbin portion with a coil thereon and a support portion with a pair of apertures having conducting rods extending therethrough. The bobbin portion further has a bore therethrough which receives a magnetic pole piece which extends through the coil. The support portion of the mounting member has a counterbore which receives a magnet; said magnet is inserted through the counterbore and held in engagement with the pole piece.

3,838,373
SELF-RECOVERING CURRENT LIMITER
Takeo Inoue; Takashi Shirazawa, both of Kobe; Tadashi Nakazaki, Sanda, and Goro Okamoto, Itami, all of Japan, assignors to Mitsubishi-Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 210,772, Dec. 22, 1971, abandoned.
This application Nov. 30, 1973, Ser. No. 420,593
Claims priority, application Japan, Dec. 25, 1970, 45-125607
Int. Cl. H01h 85/06
U.S. Cl. 337—21 11 Claims

A self-recovering current limiter of the character wherein a circuit breaking condition is provided by vaporizing a current limiting material when a short circuiting or fault current occurs, and being self-restorative to a conductive condition by liquefying the current limiting material after the passage of a specific period of time. Essentially, the self-recovering current limiter comprises a heat resistant and alkali-metal resistant insulator made of beryllia porcelain, alumina porcelain or the like having a channel holding a self-recovering current limiting material which has high impedance in its vapor condition and high conductivity in an orginal liquid condition, an outer tube made of stainless steel or brass surrounding the insulator, and an insulating material packed between the outer tube and

the insulator at a temperature higher than that at which it becomes softened.

The insulating material has a coefficient of linear expansion which is higher than that of the insulator below its softening point, and is the same or lower than that of the outer tube.



Preferably, the insulating material is made of synthetic mica powder and glassy powder comprising potassium oxide ($K_2O$), sodium oxide ($Na_2O$), lithium oxide ($Li_2O$), barium oxide (BaO) or boric anhydride ($B_2O_3$) as the main component and a small amount of lead oxide (PbO) and silica ($SiO_2$).

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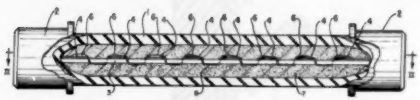
**3,838,374**

**LOW CURRENT-CARRYING CAPACITY TIME LAG FUSE**

**Edward J. Knapp, Jr., Newbury, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.**

**Filed Jan. 21, 1974, Ser. No. 435,253**
**Int. Cl. H01h** *85/14*
**U.S. Cl. 337—163** **4 Claims**



An electric current-limiting fuse includes a fusible element in the form of a wire and means arranged along the wire which perform the dual function of producing significant time lags when the fuse is carrying overload currents, and of producing highly effective series multibreaks when the fuse is subjected to major fault currents.

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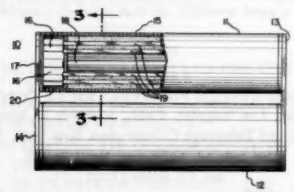
**3,838,375**

**CURRENT LIMITING FUSE**

**Gerhard Frind, Albany; Michael Owen, Latham, both of N.Y., and Ben Lee Damsky, Philadelphia, Pa., assignors to General Electric Company, Schenectady, N.Y.**

**Filed Jan. 29, 1973, Ser. No. 327,744**
**Int. Cl. H01h** *85/18*
**U.S. Cl. 337—276** **10 Claims**



Cartridge type current limiting fuses contain a fusible element within an appropriate cartridge connected to electrically conducting terminals at respective ends thereof. The fusible element is surrounded by a packed particulate mass of high resistivity high dielectric strength arc-constricting media which surrounds the fusible elements and is bound into a self-supporting rigid but porous mass by an inorganic binder which maintains good electrical and mechanical characteristics at temperatures to which the bound particulate mass is subjected to during operation of the fuse to interrupt an electrical current.

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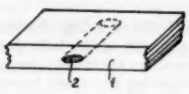
**3,838,376**

**ELECTRIC FUSES**

**Olav Norholm, Herlev, Denmark, assignor to Aktieselskabet Laur. Knudsen Elektricitets Selskab, Copenhagen, Denmark**

**Filed Feb. 2, 1973, Ser. No. 329,197**
**Claims priority, application Denmark, Feb. 4, 1972, 497/72**
**Int. Cl. H01h** *85/04*
**U.S. Cl. 337—296** **4 Claims**



In an electric fuse a fuse element of metal surrounds at least partly another material which has its boiling point near the fusing point of the fuse element. In one embodiment the fuse element consists of aluminium and the surrounded material consists of cadmium.

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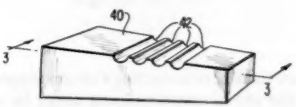
**3,838,377**

**DEVICE FOR CONTROLLING A KILN SHUT-OFF MECHANISM**

**Milan Vukovich, Jr., Galena, Ohio, assignor to The Edward Orton, Jr. Ceramic Foundation, Columbus, Ohio**

**Filed Jan. 12, 1970, Ser. No. 2,310**
**Int. Cl. H01h** *37/76*
**U.S. Cl. 337—416** **5 Claims**

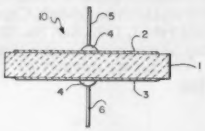


A device for controlling a mechanism which is adapted to interrupt the electrical heating circuit of a kiln; the mechanism being of the type which includes a pivotally mounted rod having the inner end thereof extending into a kiln and being operative upon downward movement of said inner end to interrupt the electrical heating circuit of the kiln. The device is a fusible pryometric member adapted to be held in the path of downward movement of the inner rod end to prevent such movement until the interior of the kiln has been exposed to a predetermined amount of heating. The member has means, such as a uniform transverse cross-section or a notch in which the inner rod end is engageable, to accurately regulate the amount of heating required to cause deformation of the member.

## 3,838,378
## VOLTAGE-NONLINEAR RESISTORS

Michio Matsuoka; Yoshikazu Kobayashi; Gen Itakura, and Takeshi Masuyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 26, 1973, Ser. No. 382,645
Claims priority, application Japan, July 26, 1972, 47-75326; July 26, 1972, 47-75327; July 26, 1972, 47-75328; July 26, 1972, 47-75329; July 26, 1972, 47-75330; July 26, 1972, 47-75331; July 26, 1972, 47-75332
Int. Cl. H01c 7/10
U.S. Cl. 338—20 6 Claims




The invention relates to voltage-nonlinear resistors having nonohmic resistance due to the bulk thereof and more particularly to varistors, are suitable for use as elements of lightning arresters, comprising zinc oxide, bismuth oxide, antimony oxide and cerium fluoride.

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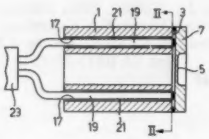
## 3,838,379
## PRESSURE TRANSDUCER FOR LIQUIDS OR GASES

Antonius Cornelis Maria Gieles; Petrus Franciscus Antonius Haans, and Johannes Van Esdonk, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,789
Claims priority, application Netherlands, Jan. 12, 1972, 7200438
Int. Cl. H01c 13/00
U.S. Cl. 338—42 5 Claims




A pressure transducer comprising a tubular support which is closed on one end by a semiconductor device for converting mechanical stresses into electrical signals.

Current supply conductors for the semiconductor device extend through ducts in the tube wall. These current supply conductors preferably consist of cemented metal wires.

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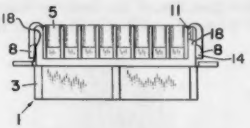
## 3,838,380
## CONNECTOR ASSEMBLY

Alfred Otto Hugo Stieler, Heilbronn/Neckar, Germany, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 31, 1972, Ser. No. 239,955
Claims priority, application Germany, Apr. 20, 1971, 2119060
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 8 Claims

Connector assembly for use in joining electrical parts comprises a contact body adapted to house and support electrical contacts coupled to a frame which encloses a portion of the body. The housing and frame form a connector assembly which can be either a male portion or a female portion of a plug-in type connector. A locking clamp engages mating surfaces on the body and on the frame to hold the body and frame together. A shielding contact is trapped between the frame and the locking clamp.

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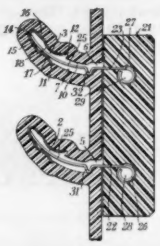
## 3,838,381
## SAFETY OUTLET AND PLUG DEVICE

Philippe De Villemeur, Maisons Alfort, France, assignor to Etablissements A. Gregoire et L. Barilleau, Maisons Alfort, France

Continuation of Ser. No. 125,777, March 18, 1971, Pat. No. 3,777,300. This application June 28, 1973, Ser. No. 374,357
Claims priority, application France, Mar. 19, 1970, 70.9881
Int. Cl. H01r 9/00
U.S. Cl. 339—21 R 2 Claims




This safety current outlet and plug device is preferably of the continuous type, i.e. constituting a kind of skirting-board along a wall or the like. The electric contact between the prongs of the cap, plug or connector and the electric conductors of the current outlet is obtained by causing the elastic deformation of the prongs consisting to this end of a very flexible conducting and elastic metal blade of very reduced thickness, for instance of the order of 0.1 to 0.3 millimeter, of which the front portion is adapted to engage a rigid surface of the female member which produces a substantial deformation of said blade which is sufficient for ensuring a satisfactory and reliable electric contact between said blade and an electric conductor inserted in said current outlet.

Thus, a current outlet may be obtained wherein any direct access to anyone of its conductors is positively prevented when using a rigid member, so that a safety current outlet is obtained.

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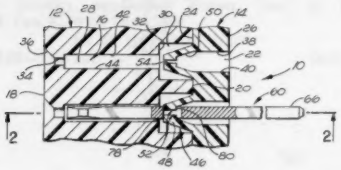
## 3,838,382
## RETENTION SYSTEM FOR ELECTRICAL CONTACTS

Joseph Sugar, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 13, 1973, Ser. No. 378,885
Int. Cl. H01r 13/40
U.S. Cl. 339—59 R 17 Claims

A retention system for a rear insert-rear release tuning fork-type socket contact or pin contact having a flat stamped body section with a rectangular opening formed therein. The insulator for the contact is formed with a passage having a pair of integral laterally resilient retention elements on opposite sides

thereof. These elements are spread apart when the contact is inserted into the passage and contract into the opening in the contact when the latter is aligned therewith to secure the contact in the passage. An extraction tool inserted through the rear of the insulator passage serves to spread the retention elements apart, thus allowing the contact to be removed rearwardly from the passage.



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**3,838,383**

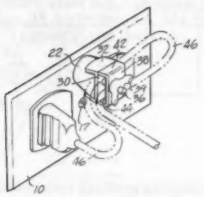
**DEVICE FOR PREVENTING DISENGAGEMENT OF ELECTRICAL CORD FROM WALL OUTLET**

**Raymond Francis Wilbur, 3329 Quesada Dr., San Jose, Calif. 95122, and Alva Leroy Powell, P.O. Box 2, South San Francisco, Calif. 94080**

**Filed June 7, 1973, Ser. No. 367,851**

**Int. Cl. H01r** *13/54*

**U.S. Cl. 339—75 P** **6 Claims**



A device for preventing accidental disengagement of an electrical cord from an electrical wall outlet has means for releasably securing same to an electrical cord in a locked position thereto. The device also has means for releasably locking same to an electrical wall outlet while permitting disengagement therefrom if a force is supplied thereto which would damage either the cord or the wall outlet.

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**3,838,384**

**PROTECTED ELECTRODE LEAD FOR USE IN A CORROSIVE ENVIRONMENT**

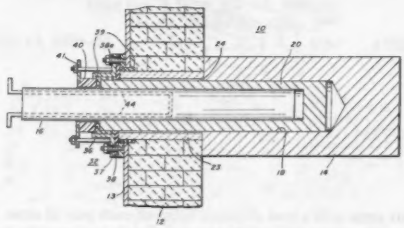
**Stanley C. Jacobs, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.**

**Division of Ser. No. 178,283, Sept. 7, 1971, Pat. No. 3,745,107. This application Dec. 26, 1972, Ser. No. 318,236**

**Int. Cl. B01k** *3/02*; **H01r** *3/02*, *13/00*

**U.S. Cl. 339—112** **4 Claims**

An electrode assembly for use in an electrolytic cell having a corrosive environment comprising high temperature chlorine gas and a bath of aluminum chloride dissolved in one or more salts. The assembly comprises an electrode disposed within the cell, at least one electrical current conducting lead made of material susceptible to corrosive attack by the environment extending into the electrode, and a fluid impervious, electrically conductive sleeve disposed around the lead along at least the length thereof extending through a wall of the cell, and in contact with the electrode. The fluid impervious sleeve is effective to prevent contact of approaching corrosive constituents with the lead.



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**3,838,385**

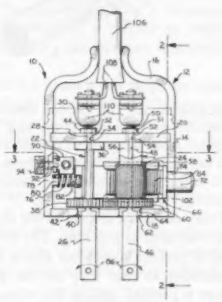
**SAFETY PLUG**

**Jack W. Bloomingdale, 1A Donald St., Harrisburg, Pa. 17055**

**Filed Nov. 24, 1972, Ser. No. 309,349**

**Int. Cl. H01r** *33/06*

**U.S. Cl. 339—196 A** **7 Claims**



An electrical safety plug with rotatable male blades. When inserted in a female socket, the blades are biased for rotation about their longitudinal axis so that when the plug is withdrawn the blades rotate and then lock in a position making it impossible to reinsert the plug in the socket.

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**3,838,386**

**BATTERY TERMINAL CLAMP**

**Armand N. Chartrain, Agoura, and Carl W. Newell, Glendale, both of Calif., assignors to Korrosion-Clean-Klamp Co., Van Nuys, Calif.**

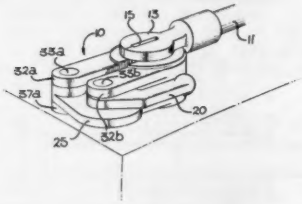
**Filed Sept. 25, 1972, Ser. No. 291,654**

**Int. Cl. H01r** *7/06*

**U.S. Cl. 339—226** **3 Claims**

A battery terminal clamp which may be manually clamped or removed from a battery terminal post or from a connector

engaging a battery terminal post is disclosed. The portion of the clamp which receives the post includes two pairs of spaced



apart arms with a stud disposed between each pair of arms. A camming means operates between the studs to clamp the battery post.

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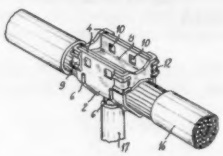
**3,838,387**
**WIRING CONNECTOR**

**Jacques Grillet, 4 Place Bir Hakeim, Grenoble, France**

**Filed Aug. 3, 1972, Ser. No. 277,660**
**Claims priority, application France, Aug. 30, 1971, 7132054**
**Int. Cl. H01r** *7/06*
**U.S. Cl. 339—244 UC** **10 Claims**



A wire connecting device for various electrical appliances comprises essentially a U-shaped strap and a shallower U-shaped clamping member adapted to fit into the strap so as to clamp the wires between the bottoms of these elements. Windows are formed in the side walls of said clamping member for retaining by setting the adjacent wings of the strap. End distance-pieces may complete if desired the clamping member to which they are secured to caulking. The strap wings have a length sufficient to project somewhat above the top edges of the clamping member so that they can be pulled while the clamping member is pressed against the wires, whereafter the excess metal of said wings is cut off by using the top edges of the clamping members as counter-blades.

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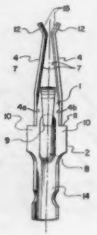
**3,838,388**
**FURCATE CONTACT**

**Gerhard Bauerle, Willsbach, and Oswald Hubner, Neuenstadt, both of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.**

**Filed May 23, 1973, Ser. No. 362,913**
**Claims priority, application Germany, May 31, 1972, 2226561**
**Int. Cl. H01r** *13/12*
**U.S. Cl. 339—258 R** **2 Claims**

A furcate contact with at least two resilient contact arms. The contact has a body portion supporting the contact arms which converse toward one another adjacent the tip of the contact. Each contact arm is concavely arched perpendicular to its longitudinal axis and toward the opposite contact arm, the arched portion extending over essentially the entire length of each contact arm. In a preferred embodiment of the invention, each contact arm is divided into two arched contact fingers, each of the fingers being concavely arched perpendicular to its longitudinal axis and toward the opposite finger.



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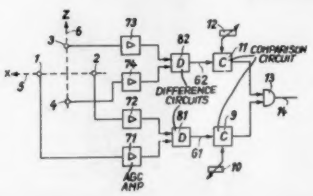
**3,838,389**
**SPACE MONITORING GRADIENT SYSTEM**

**Claus-Peter Buddruss; Arnim Cronjaeger, both of Bremen, and Karl-Friedrich Triebold, Bremen-Osterholz, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany**

**Filed Aug. 8, 1973, Ser. No. 386,732**
**Claims priority, application Germany, Aug. 16, 1972, 2240041**
**Int. Cl. G01s** *3/80*
**U.S. Cl. 340—6 R** **9 Claims**




A space monitoring gradient system including at least a plurality of transducers arranged to produce at least two pairs of transducers with the spacing of the transducer of each pair being less than one wavelength of the received signals produced by a noise source at the highest receivable frequency. The axes of the two pairs of transducers are perpendicular to one another with the axis of one pair being parallel to the ground and the axis of the other pair being perpendicular to the ground. A separate automatic gain control (AGC) amplifier is connected in series with the output of each of the transducers, and first and second difference circuits are provided for forming respective gradient voltage signals from the outputs from the respective AGC amplifiers of each pair of transducers. A first comparator compares the gradient voltage signal at the output of the first difference circuit, which is associated with a pair of transducers parallel to the ground, with a first settable comparison voltage and produces an "L" signal at its output whenever the output of the first difference circuit is equal to or less than the first comparison voltage. A second comparator compares the gradient voltage signal at the output of the second difference circuit with a second settable difference voltage and produces an "L" signal output whenever the output of the second difference circuit is greater than the second comparison voltage. The outputs of the first and second comparators are fed to an AND gate which produces an "L" signal at its output when an "L" signal is present at each of its inputs.

3,838,390

## NEW OPERATIONAL DISPOSITION FOR OBTAINING THREE-DIMENSIONAL SEISMIC INFORMATION

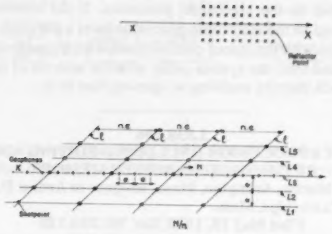
Dominique Michon, Paris, France, assignor to Compagnie Generale de Geophysique, Paris, France

Filed Nov. 7, 1972, Ser. No. 304,561

Claims priority, application France, Nov. 8, 1971, 71.39918; Feb. 8, 1972, 72.04100

Int. Cl. G01v 1/16, 1/20

U.S. Cl. 340—15.5 MC 10 Claims



In a seismic prospecting operational disposition for obtaining three-dimensional seismic information, pickups and shotpoints are distributed in correspondence with a two-dimensional grid of reflector-points, each reflector-point giving rise to a plurality of elementary paths passing through a shotpoint, reflector-point and pickup, permitting mixing of the elementary traces to form a common depth-point stack.

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3,838,391

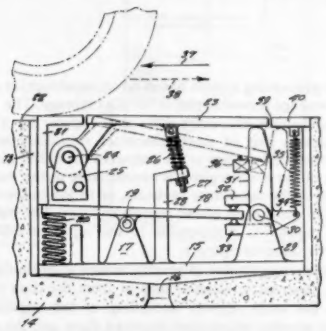
## ROADWAY SAFETY TRAP

Leonard H. Mintz, 24340 Miles Rd., Cleveland, Ohio 44128

Filed Mar. 23, 1973, Ser. No. 344,152

Int. Cl. G08g 1/02

U.S. Cl. 340—39 1 Claim



A travel-resisting device mounted in an exit ramp of a throughway, expressway or other road, and which is designed to prevent automobiles to enter and move in wrong direction lanes; the device consisting of two or three separate units each of which includes a downwardly tiltable platform so that when rode across in a wrong direction will cause the dropped wheels to abut hard against a fixed ledge so to resist and hold back further forward travel, the device also activating signal devices such as lights or bells to alert and warn other motorists and alert the careless drivers, and a last of the units having a toothed or sharp knife-like edge on the ledge so to puncture the tires as a final step to stop the vehicle and prevent a serious accident on the high speed right-of-way.

3,838,392

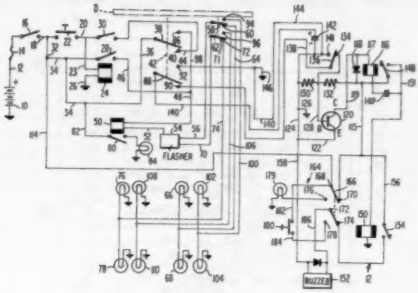
## AUDIBLE WARNING SYSTEM FOR SCHOOL BUSES

John E. Lockwood, Hamilton Square; Herbert S. Spair, Robbinsville, and Richard A. Spair, Sr., Hamilton Square, all of N.J., assignors to Richard A. Spair, Sr.; John E. Lockwood, both of Hamilton Square and Herbert S. Spair, Robbinsville, all of, N.J., part interest to each

Filed July 5, 1973, Ser. No. 376,698

Int. Cl. B60q 5/00, 1/26

U.S. Cl. 340—75 4 Claims




Combined with an already known electrical circuit used in school buses to activate flashing yellow and red lights, the present invention provides an audible warning to children who have alighted from the bus. The audible warning system is automatically activated in response to closing of the door of the bus preparatory to movement of the bus away from the stop, sounding a clearly audible warning, preferably at the front and rear of the bus, for a time period sufficient to warn the children away from the bus until it is safely on its way, and has put enough distance between the bus and the children to prevent their injury. The system employs a transistorized circuit in which power supplied to a buzzer or other audible alarm device is controlled by one or more transistors, in association with a capacitor.

As the school bus nears a bus stop, the operator activates a yellow warning light system, which changes automatically to a red light warning system while the bus is stopped. Upon opening of the school bus door, the capacitor is short-circuited and discharged, in a circuit configuration that withholds current from the audible alarm device. On closing of the door, the capacitor prevents the transistor from conducting during the time required to charge the capacitor, and in this predetermined time period the buzzer or other alarm device is caused to operate in response to rendering the transistor non-conductive while the capacitor is again being charged.

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3,838,393

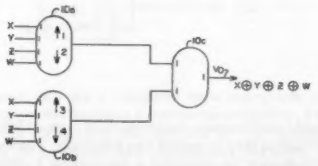
## THRESHOLD LOGIC GATE

Tich T. Dao, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 17, 1973, Ser. No. 425,217

Int. Cl. G06f 11/10; H03k 19/08, 19/42

U.S. Cl. 340—146.1 AG 6 Claims




A threshold logic gate is utilized for parity checking by providing two double threshold detectors responsive to logic

levels provided by a level shifter which shifts the logical voltage levels produced by a differential amplifier which sums the four inputs.

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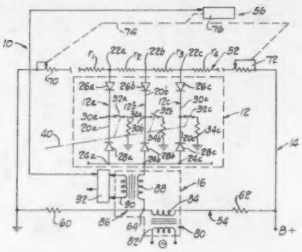
**3,838,394**
**TRANSMISSION SYSTEM**
**Dante J. Sandoval, 6412 Pear Ave., Cleveland, Ohio 44102**
**Filed Sept. 4, 1973, Ser. No. 393,965**
**Int. Cl. H04q** *3/00*
**U.S. Cl. 340—147 R** **20 Claims**



The invention contemplates systems for transmitting signals or the like via selected ones of a number of separate paths by establishing a null across a selected path location to enable the path effective to transmit a signal. One disclosed embodiment of the invention is a binary memory storage unit. Another disclosed embodiment is an electrical intercommunication system. Still another disclosed embodiment features an adjustable iris.

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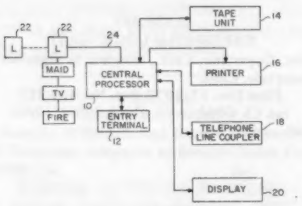
**3,838,395**
**ELECTRONIC VARIABLE COMBINATION LOCK AND MONITORING SYSTEM**
**Francis John Suttill, Jr., West Collingswood; John M. Holt, Cherry Hill, and Robert H. Ray, Cinnaminson, all of N.J., assignors to Commplex, Inc., Philadelphia, Pa.**
**Filed Dec. 4, 1972, Ser. No. 312,067**
**Int. Cl. H04q** *5/16*
**U.S. Cl. 340—149 A** **26 Claims**




A variable combination electronic lock is provided in which the combination may be varied electronically. The lock is provided with means for receiving a key having a combination. The combination of the key is detected and the detected combination is checked or compared with the combination assigned to the lock. If the combination on the inserted key is identical to the assigned combination, a lock release means of the lock is enabled. In one preferred use, a plurality of locks is provided with each lock being assigned an address. All of the locks may be connected to an electronic processor by means of a single system cable. The electronic processor stores a combination for each of the locks. Each of the plurality of locks is addressed in sequence, and the combination of the key, if any, inserted into the key receiving means of the lock is transmitted to the electronic processor for comparison with the combination stored. In addition, other information indicative of predetermined conditions at the location of each lock, such as the existence of excessive heat due to a fire, may be transmitted to the electronic processor. If the combination transmitted to the electronic processor from a particular location agrees with the stored combination, a lock enable signal is transmitted over the system cable with the address of the particular lock thereby enabling or opening that lock.

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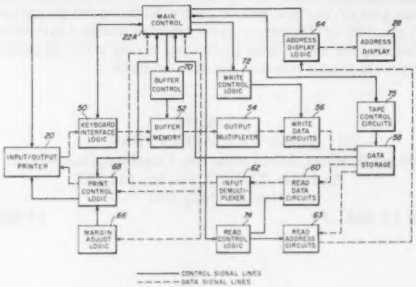
**3,838,396**
**DATA PROCESSOR (INCLUDING EDITING AND REVISION) WITH BUFFER MEMORY**
**Peter G. Martin, Arlington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.**
**Filed May 18, 1972, Ser. No. 254,725**
**Int. Cl. G11c** *9/00*; **G06f** *7/22*
**U.S. Cl. 340—172.5** **11 Claims**




A word-processing system based on an input/output printer and mass storage recorder/player for data storage. The system employs a multiple-character main shift register for a buffer memory and a pair of single-character subsidiary shift registers connected in series to the output of the buffer memory. The input of the main register is connectable to the output of the second of the subsidiary registers, or to the output of the printer or to the output of the recorder/player. The output of the main register is connectable to the input of either the printer or the recorder/player.

The system is operative in several modes wherein data can be readily inserted or deleted into or from the data already stored in the main register according as the registers are clocked to transfer information between them and the printer and player/recorder.

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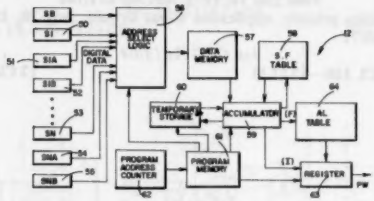
**3,838,397**
**FUEL INJECTION PULSE WIDTH COMPUTER**
**George A. Watson, Tustin, and Glen R. Griffith, Westminster, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.**
**Filed Apr. 25, 1973, Ser. No. 354,294**
**Int. Cl. G05b** *15/00*; **F02b** *3/00*
**U.S. Cl. 340—172.5** **20 Claims**

A real time, digital computer is used to calculate a pulse width, for example, for fuel injection systems. The computer uses data from environmental sensors, data stored internally in

fixed memories and an instruction program stored internally in a further fixed memory to calculate the pulse width. In fuel



injection systems, the pulse width determines the length of time a fuel injector is operative during each engine cycle.

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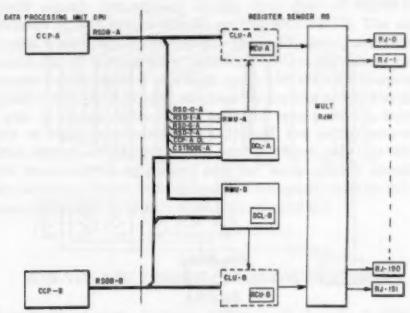
## 3,838,398
## MAINTENANCE CONTROL ARRANGEMENT EMPLOYING DATA LINES FOR TRANSMITTING CONTROL SIGNALS TO EFFECT MAINTENANCE FUNCTIONS

**James P. Caputo, Elmwood Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed June 15, 1973, Ser. No. 370,277**
**Int. Cl. G06f *11/00***
**U.S. Cl. 340—172.5** **7 Claims**

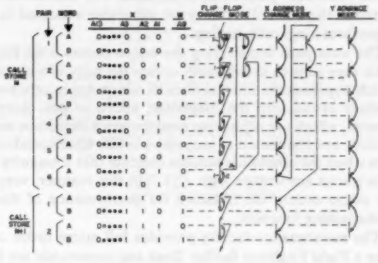


A maintenance control arrangement for use with a communication switching system having a central processor and a register sender interconnected by a data bus includes a maintenance circuit having direct control latch circuits and gate circuits operable when enabled to provide control signals for controlling apparatus associated with the register sender. A register sender memory stores direct control data bits which indicate which of the direct control latch and gate circuits are to be enabled and a control pulse directive transmitted over the data bus from the central processor to the maintenance circuit effects the generation of enabling signals which upon coincidence with direct control data bits read out of the register sender memory cause selective ones of the direct control latch and gate circuits to be enabled.

## 3,838,399
## EVEN/ODD REPEAT ADDRESS COUNTER

**Rafael A. Sanabria, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.**

**Filed Sept. 21, 1973, Ser. No. 399,672**
**Int. Cl. G06f *7/385, 13/00***
**U.S. Cl. 340—172.5** **5 Claims**



An address counter which advances 12 consecutive counts, jumps back 12 counts, advances forward 4 consecutive counts, jumps forward 8 counts, and then repeats the same process in a cyclic fashion.

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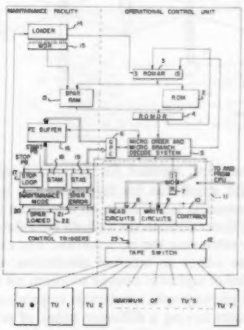
## 3,838,400
## MAINTENANCE FACILITY FOR A MAGNETIC TAPE SUBSYSTEM

**James Edward Meadows; Larry Ray Horsman, and Anthony Louis Carpentier, all of Boulder, Colo., assignors to Storage Technology Corporation, Boulder, Colo.**

**Division of Ser. No. 257,078, May 26, 1972, Pat. No. 3,798,614. This application Nov. 12, 1973, Ser. No. 415,114**
**Int. Cl. G06f *3/02, 13/00***
**U.S. Cl. 340—172.5** **3 Claims**



A control unit for a magnetic tape subsystem of a data processing system includes a maintenance facility. This maintenance facility permits the exercise of the magnetic tape subsystem for diagnostic and maintenance purposes. The control unit is of the microprogram type, in which a control memory contains micro orders which control the operation of the magnetic tape units. The maintenance facility exercises

the tape subsystem in two different manners—with the Input/Output command language of the CPU or with the micro order language of the control unit. This can be performed while the magnetic tape subsystem is switched offline to the CPU, or time-multiplexed with the operational usage of the magnetic tape subsyste by the CPU.

The control unit includes a random access memory connected in parallel with the control memory. In the diagnostic mode, micro orders are transferred from a magnetic tape unit to the random access memory. Then, sequences of these micro orders are performed in the same way that micro orders stored in the control memory are otherwise executed in order to perform diagnostic testing.

The data path transferring the micro orders from the magnetic tape unit to the random access memory is a simple one which bypasses the normal circuits which might otherwise introduce errors into the diagnostic micro orders. Amplitude sensors, which are otherwise used for error detection and correction, are connected to majority circuits which produce outputs when the amplitude sensors indicate that a majority of the data tracks are written with a "1." In this manner, very reliable micro orders are obtained for performance of the diagnostic testing function.

The maintenance facility provides full micro order control over a Field Engineer Buffer. Data and commands are loaded into a fetched from any buffer position under manual switch control or microprogram control.

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**3,838,401**

## STORAGE MEDIUM, METHOD FOR RECORDING INFORMATION THEREON, AND APPARATUS FOR RETRIEVING THE INFORMATION THEREFROM

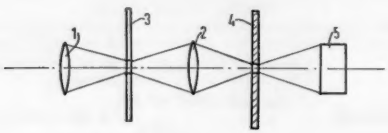
**Peter Graf, Muenchen, and Dieter Roess, Planegg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany**

**Filed June 21, 1971, Ser. No. 154,799**

**Claims priority, application Germany, June 25, 1970, P 20 31 515.5**

**Int. Cl. G11c *13/04, 11/46***

**U.S. Cl. 340—173 LM** **1 Claim**




A storage medium, method for recording information on the medium and apparatus for retrieving the information in which the information is stored as an alteration in the storage medium which alteration causes a phase modulation of a beam of light used in retrieving the information. For example the alteration may be either an internal alterations, either a cross linked molecules of a plastic storage medium, or the bleaching of the exposed photographic materials to produce light transmitting silver salts having a different index of refraction than the unexposed portions, or the formation of a surface relief to cause a phase modulation of a laser beam projected through the medium or reflected thereby. The formation of the surface reliefs can be accomplished by plastically deforming the surface of the medium, by fusing, by locally evaporating portions of the surface of the medium, or by local etching. Apparatuses for retrieving the information can include either filters or phase shifters which change a phase modulated beam of light into intensity modulated or amplitude modulated beam of light.

**3,838,402**

## FILM STRIP READ-OUT APPARATUS WITH MOVABLE OPTICAL ELEMENT

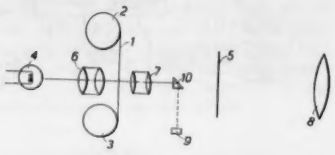
**Christopher Arthur James Gracie, Edinburgh, Scotland, assignor to Ferranti Limited, Hollinwood, Lancashire, England**

**Filed July 14, 1972, Ser. No. 271,781**

**Claims priority, application Great Britain, July 20, 1971, 34030/71**

**Int. Cl. G11c *13/04***

**U.S. Cl. 340—173 LM** **12 Claims**




Information storage apparatus has display information stored on a length of film and displayed by passing light from a source through the film and onto a viewing screen. The film also carries encoded digital information which is read out by modifying the optical system so that light from the source passing through the film is directed onto a plurality of light-sensitive devices.

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**3,838,403**

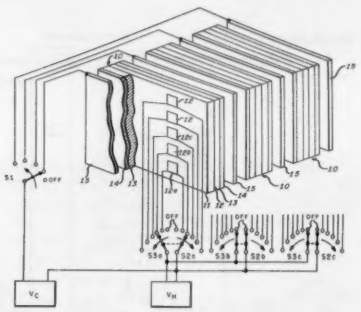
## STACKED PHOTOPLASTIC DATA STORAGE SYSTEM

**William T. Maloney, Sudbury, and Donald H. McMahon, Carlisle, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.**

**Filed Mar. 30, 1973, Ser. No. 346,503**

**Int. Cl. G11c *13/04, 11/42***

**U.S. Cl. 340—173 TP** **14 Claims**

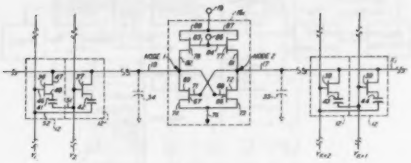



An electro-optical data storage system and method of operation thereof comprising the means and steps, respectively, for selectively recording and reading data stored in any of a plurality of tandemly disposed photoplastic plates. Data is recorded on each plate by uniformly charging a selected plate, exposing the selected plate to a data beam which modulates the charge to produce a charge pattern representative of the data, briefly heating the plate to a softened condition to develop the charge pattern as a deformation image on the photoplastic surface, and converting the deformation image to a latent image by briefly reheating the plate to a greater degree than used for developing the deformation image. The data stored in any plate is read out by uniformly recharging and again reheating a selected plate to reconstitute the latent image as a deformation image which modulates a beam propagating through the plate so that the stored data is imparted to the beam for readout.

## 3,838,404
## RANDOM ACCESS MEMORY SYSTEM AND CELL

**Richard H. Heeren, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.**

**Filed May 17, 1973, Ser. No. 361,377**
**Int. Cl. G11c *13/00***
**U.S. Cl. 340—173 DR** **50 Claims**



In an array of memory cells having the cells in each column coupled together by one of a plurality of address buses, the ground reference potential for each cell is provided by coupling a storage capacitor in each cell to an adjacent address bus. Since only one address bus is addressed at any selected time, the adjacent address buses remain at ground potential so that coupling of the storage capacitors in each addressed cell to the adjacent, grounded address buses supplies the required reference ground for each addressed cell. Refreshing, or restoring of the charges on the storage capacitor in each memory cell is accomplished by a plurality of sense-refresh amplifiers. Each sense-refresh amplifier can be coupled to a selected cell capacitor in a row of memory cells, and includes a first pair of MOSFET devices cross-coupled in a flip-flop configuration. In one embodiment, single phase clock signals are applied to the first pair of MOSFET's through an ON biased second pair of MOSFET's. The clock signals thus applied synchronize the read, write, and refresh functions of the memory. Alternatively, single phase clock signals can be applied to a third pair of MOSFET's coupled in parallel with the first pair, or a clock pulse can be used to short a pair of circuit nodes during an initial time period to bring a pair of load capacitances to a desired, low initial potential. Data signals are applied to and read-out from only one side of the sense-refresh amplifier, and the sense-refresh amplifier also serves to invert the data stored in memory cells on the opposite side, and to re-invert the data on read out.

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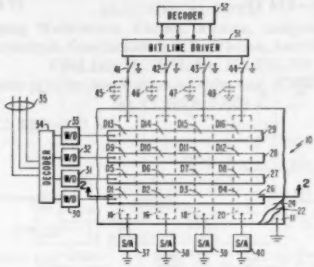
## 3,838,405
## NON-VOLATILE DIODE CROSS POINT MEMORY ARRAY

**Patrick C. Arnett, Putnam Valley, and Joseph J. Chang, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed Oct. 3, 1973, Ser. No. 402,956**
**Int. Cl. G11c *11/40***
**U.S. Cl. 340—173 R** **12 Claims**

A dense memory array in which every cross point of two insulated orthogonal sets of lines define a non-volatile memory device is described. Each device utilizes voltage and storage charge to control breakdown characteristics of a PN junction. Basically, the array comprises insulated metallic word lines orthogonal to bit line diffusions in a semiconductor body. The insulation between the word lines and the bit lines has dual charge states and can store charges. Biasing of the word and bit lines causes charges to be injected into the insulation to affect the surface field of the body and thus change the breakdown voltage of the diffusion with respect to the semiconductor body. Both the read and write operations involve voltage breakdown of the PN junction between the diffused bit line and the body. During the write operation, an avalanche breakdown of the junction is caused to occur and charge carriers are injected into the overlying insulator. The charge carriers so injected remain localized in the insulator immediately above the junction and therefore do not disturb the information on adjacent bit lines. To erase, a voltage is applied to cause the injected carriers to be driven out of the insulation into the substrate. Reading consists of sensing the breakdown voltage of the selected bit.

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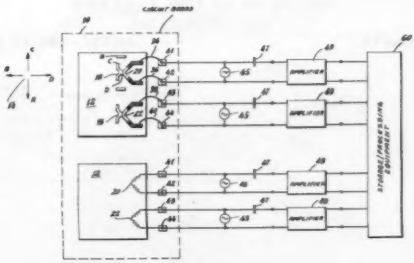
## 3,838,406
## MAGNETO-RESISTIVE MAGNETIC DOMAIN DETECTOR

**Leonard D. Cohen, Brooklyn, N.Y.; Brian A. Shortt, and Michael J. Urban, both of Framingham, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.**

**Filed Mar. 23, 1973, Ser. No. 344,376**
**Int. Cl. G11c *11/14***
**U.S. Cl. 340—174 EB** **9 Claims**



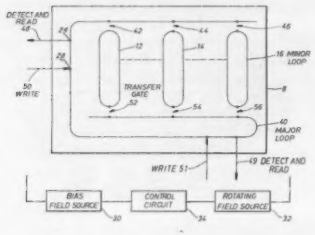
A cylindrical magnetic domain detector is formed of a pair of series coupled magneto-resistive elements which are disposed in magnetic coupling relationship with a cylindrical magnetic domain memory position, each detector element in quadrature arrangement can be piecewise distributed in sections of arbitrary length. An undesirable signal due to the rotating magnetic field generates an extraneous signal in the respective elements which differ in phase by 180°. The arrangement of these elements results in suppressing these extraneous signals at the output of the detector.

**3,838,407**

## BUBBLE MEMORY ORGANIZATION WITH TWO PORT MAJOR/MINOR LOOP TRANSFER

**Jan Egil Juliussen, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Filed Dec. 28, 1973, Ser. No. 429,260**
**Int. Cl. G11c 11/14, 19/00**
**U.S. Cl. 340—174 TF** **27 Claims**




A magnetic bubble organization including a major loop which does not close on itself, but which does pass each of the minor loops in the same order to provide two locations in each minor loop for bubble transfer. Preferably, the two transfer locations on each minor loop are symmetrically located and the transfer mechanism can be one-way transfer gates. This permits transfer out of a minor loop into the major loop at one of the two gates for the minor loop and out of the major loop into the minor loop at the other of the two gates for the minor loop.

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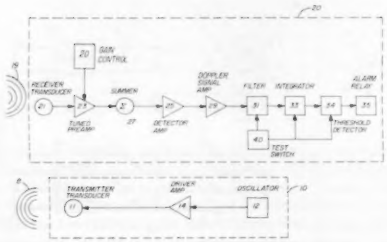
**3,838,408**

## ENVIRONMENTAL TEST SWITCH FOR INTRUDER DETECTION SYSTEMS

**Richard LaVerne McMaster, Rochester, N.Y., assignor to Detection Systems, Inc., Fairport, N.Y.**

**Filed Feb. 9, 1973, Ser. No. 331,202**
**Int. Cl. G08b 29/00**
**U.S. Cl. 340—214** **3 Claims**



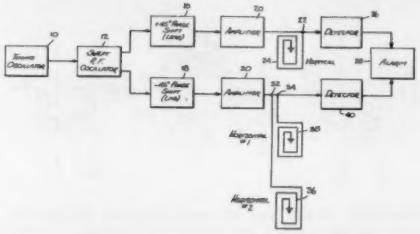

A method and apparatus for optimizing the sensitivity of intruder and fire detection systems for a predesired margin of safety against false alarming. The apparatus comprises means for selectively increasing the system sensitivity by a calibrated amount above an optimum operating level, and means for adjusting the selectively increased system sensitivity, to a level at which the system just responds (or just fails to respond) to the background noise level. Thus, when the sensitivity is returned to its normal operating level, a built-in margin of safety is provided against false alarming from noise signals.

**3,838,409**

## FIELD STRENGTH UNIFORMITY CONTROL SYSTEM FOR ARTICLE THEFT DETECTION SYSTEM

**Arthur J. Minasy, Woodbury, and Ronald Pruzick, Commack, both of N.Y., assignors to Knogo Corporation, Westbury, N.Y.**

**Filed Apr. 13, 1973, Ser. No. 351,018**
**Int. Cl. G08b 13/24**
**U.S. Cl. 340—258 C** **19 Claims**




An electromagnetic interrogation field in a theft detection system is made effectively more uniform by energizing different antenna windings lying in different planes at the same frequency but at different phases so that the resulting field pattern rotates in the vicinity of the antenna windings.

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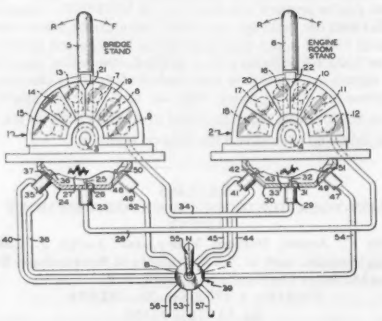
**3,838,410**

## MULTI-STATION ENGINE CONTROL SYSTEM

**Wilhelm Georg Bachmann, Am Lienkamp 9, 3001 Godshorn; Ehrenfried G. Scheffel, Bernhard-Ahlers-Str. 14, 282 Bremen-Aumund; Klaus J. Weissenfels, Stockenerweg 30, 3011 Letter, and Hermann Ziehe, Okerstr. 18, 3301 Watenbuttle, all of Germany**

**Continuation of Ser. No. 41,380, May 28, 1970, abandoned.**
**This application Jan. 17, 1973, Ser. No. 324,523**
**Int. Cl. H04g 1/18**
**U.S. Cl. 340—286 R** **6 Claims**

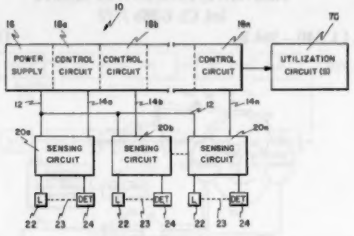



Remote control apparatus for ship engines and the like comprising a plurality of manually operable control devices each remotely situated from the others at respective stations and each having means for transmitting and receiving, simultaneously to and from all the other stations, a command signal initiated at any one of the stations, said apparatus being further characterized by means for selectively cutting out or activating certain ones of the control devices so that operation of the ship's engines can be effected only by a control signal initiated from the control device at the station thus activated, though the command signal is initiated at one of the other stations and transmitted to the activated control device.

## 3,838,411
## DETECTION SYSTEM

Clayton H. Vander Meer, Wyoming, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.

Filed Jan. 2, 1973, Ser. No. 320,512
Int. Cl. H04m 1/04
U.S. Cl. 340—310 R 14 Claims

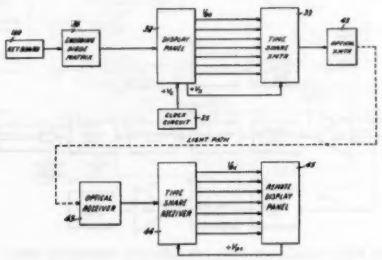



A system for detecting objects or predetermined conditions at remote locations employs a control circuit coupled to a remote sensor circuit by two conductors to supply power to the sensor circuit during the positive half of each cycle. During the negative half of the cycle of operation, the remote sensor circuit develops an output signal indicating the presence or absence of an object or other detected condition and applies the signal to the control circuit via the same two conductors. The control circuit responds to the signal from the sensor circuit to provide an output signal for actuating a control related to the detected condition.

## 3,838,412
## OPTICAL LINK FOR ILLUMINATED TRAVELING MESSAGE DISPLAY SIGN SYSTEM

Clifford M. Jones, Waynesboro, Va., and John D. Harnden, Jr., Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 99,192, Dec. 17, 1970, Pat. No. 3,727,185, which is a division of Ser. No. 778,218, Nov. 22, 1968, Pat. No. 3,590,508, which is a division of Ser. No. 449,177, April 19, 1965, Pat. No. 3,432,846. This application Sept. 5, 1972, Ser. No. 286,360
Int. Cl. G08b 5/36
U.S. Cl. 340—334 5 Claims

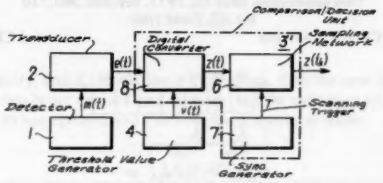



An optical link between display panels of an illuminated traveling message display sign system includes a time-share transmitter having an optical transmitter connected to the output thereof and an optical receiver located remote from the optical transmitter and a time-share receiver connected to the output thereof. The optical transmitter includes a light emitting diode and the optical receiver includes a photoelectric device for detecting the optical output of the optical transmitter and converting the detected output into serial electrical pulse form. The time-share receiver converts the output of the optical receiver to data in parallel electrical pulse form.

## 3,838,413
## CIRCUIT ARRANGEMENT FOR ANALOG-TO-DIGITAL CONVERSION OF MAGNITUDES OR SIGNALS IN ELECTRICAL FORM

Wolfgang Wehrmann, Vienna, Austria, assignor to Norma Messtechnik Gesellschaft m.b.H., Vienna, Austria

Filed July 31, 1972, Ser. No. 276,385
Claims priority, application Austria, Aug. 3, 1971, 6780/71
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 15 Claims

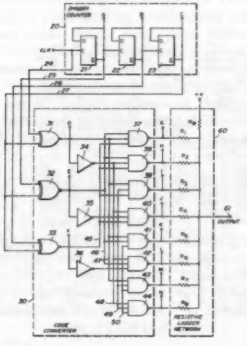



Apparatus for converting analog electrical signals to a digital electrical signal wherein the statistical probability of a predetermined state for the digital output signal is a predetermined function of the analog input signals to provide digital signals having improved transmission capabilities. A continuously varying threshold electrical signal having a predetermined statistical distribution of amplitudes is compared to the analog input signal and the result of such a comparison is used to produce and control the digital output signal such that the statistical probability of a given digital state is a predetermined function of the analog input corresponding to the predetermined statistical distribution of amplitudes of the continuously varying threshold signal.

## 3,838,414
## DIGITAL WAVE SYNTHESIZER

Michael F. Wiles, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 3, 1972, Ser. No. 277,713
Int. Cl. H03k 13/04
U.S. Cl. 340—347 DA 3 Claims



A digital wave synthesizer provides an output waveform of frequency $f$ in response to an input of periodic pulses from a clock source at a frequency of $2^n f$. The periodic pulses are

received by a simple binary counter of n stages which provides n outputs, each from one stage, in a time sequence in accordance with the count of the counter. A code converter receives each of the n outputs from the counter and also the periodic pulses, combines them and provides $2^n$ unique output signals. An output circuit comprised of a resistive ladder network receives the $2^n$ output signals and provides $2^n$ voltage signals at predetermined levels which, in sequential occurrence, produce the symmetrical waveform output.

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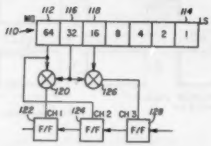
### 3,838,415
### DATA MODEM APPARATUS

**William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.**

**Division of Ser. No. 187,675, Oct. 8, 1971, Pat. No. 3,764,743. This application May 16, 1973, Ser. No. 360,710**
**Int. Cl. G06f** *5/00*
**U.S. Cl. 340—347 DD** **1 Claim**




Apparatus for and the method of providing three channel, eight phase data modulation and demodulation whereby the system may be used for either two or three channels with no detrimental effects in either mode of operation due to the additional circuitry. The invention discloses additional apparatus for connection to a conventional two channel, four phase system to produce a three channel, eight phase system. The coding of the eight phase system modifies the basic phase change of a two channel, four phase system by ±22.5° depending upon the inclusive OR result of the first two channels as compared to the binary logic level of the third channel.

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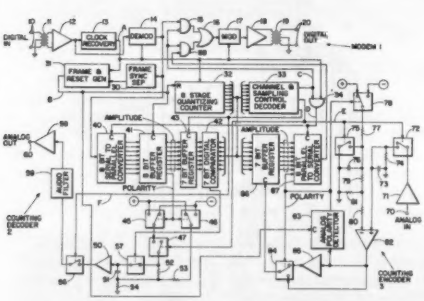
### 3,838,416
### DIGITAL/ANALOG SUBTERMINAL

**Anthony Kevin Dale Brown, Ottawa, Ontario, Canada, assignor to Northern Electric Company, LImited, Montreal, Quebec, Canada**

**Filed July 2, 1973, Ser. No. 375,836**
**Int. Cl. H03k** *13/20*
**U.S. Cl. 340—347 DA** **3 Claims**




A digital/analog subterminal in a digital transmission system in which the total number of quantizing levels of the analog signal is less than the total number of digits per frame so that the quantizing control signal can be derived directly from the recovered digital clock signal without the necessity fo: separately controlled quantizing control generators.

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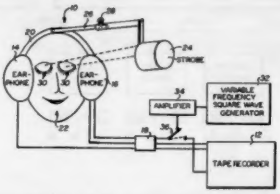
### 3,838,417
### VISUAL COLOR RESPONSE APPARATUS

**Seymour Charas, 230 Jay St. N.E., Brooklyn, N.Y. 11201**

**Filed Nov. 2, 1972, Ser. No. 303,014**
**Int. Cl. G08b** *5/38*
**U.S. Cl. 340—366 B** **11 Claims**




An apparatus for producing a visual color response in an observer includes a flashing stoboscopic light and a means for controlling the flashing frequency of this light so as to provide a light signal having a predetermined flashing frequency substantially within the range of at least 1 to 16 cycles per second for producing at least a selected predetermined color within the visible light spectrum as the visual color response, the color being dependent on the flashing frequency, a different color being produced at a different flashing frequency. Means, such as a tape recorder in conjunction with a headset to which the strobe can be attached, are also provided for substantially simultaneously producing an audio response in the observer correlated with the visual response. The flashing frequency is preferably controlled independently of the audio signal, such as music, although subjectively correlated to the mood of the music.

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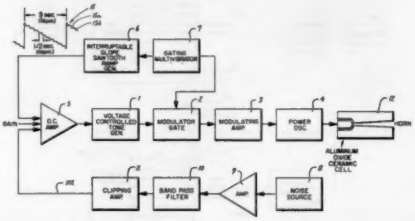
### 3,838,418
### PEST CONTROL APPARATUS AND METHOD

**Craig T. Brown, Corona, Calif., assignor to Mildred Miller, Beverly Hills, Calif.**

**Filed June 26, 1972, Ser. No. 266,058**
**Int. Cl. G08b** *3/00*
**U.S. Cl. 340—384 E** **7 Claims**

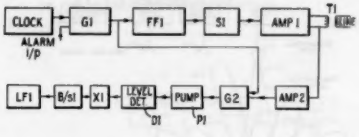



A pest control apparatus and method for dispersing pests, e.g., rodents, from a designated area by the transmission into the area of high intensity ultrasonic sound waves having a primary frequency varying as a function of time and frequency modulating the sound waves with a secondary vibrato. The apparatus additionally provides periodic bursts of such ultrasonic power affording transducer rest periods maximizing the power handling capability of the transducer during "on" periods.

### 3,838,419
### SECURITY ALARM SYSTEM WITH FAULT INDICATION

David J. McSorley, Twickenham, and Jaye De Croos, Banstead, both of England, assignors to Alarm Equipment Supplies Limited, Twickenham, Middlesex, England

Filed Apr. 17, 1973, Ser. No. 351,881
Int. Cl. G08b 29/00
U.S. Cl. 340—409 4 Claims

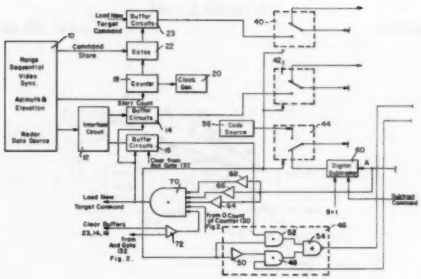



A data signalling system includes a transponder at each end of a transmission line, a first of the transponders including means for transmitting an intermittent signal to the second transponder and the second transponder including means responsive to the termination of an incoming signal from the first transponder for transmitting a corresponding answer signal back to the first transponder in the gap before the next incoming signal. The two transponders therefore form a closed loop line monitoring system in which a genuine line fault is detected by the absence of an incoming signal at both ends of the line. The system is particularly useful in security alarm systems.

### 3,838,420
### COORDINATE STORE DIGITAL SCAN CONVERTER

James L. Heard; William C. Hoffman, both of Torrance; Eugene W. Opittek, Tustin, and Gerald Wolfson, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

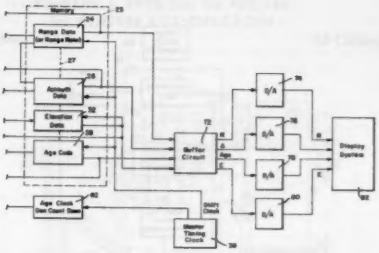
Filed Aug. 29, 1972, Ser. No. 285,285
Int. Cl. G01s 7/04
U.S. Cl. 343—5 SC 7 Claims



A radar processor encodes the data associated with target hits. This digital data is entered into a small circulating memory together with an age code. The age code is decremented at a predetermined rate. The digital data while being transferred between the output and the input of the memory is also applied to a suitable display system. The age code determines the brightness of the display.

When the age code has decreased below a predetermined level, this is sensed and new target hit data is entered into the location occupied by the target hit data associated with the minimum age code.

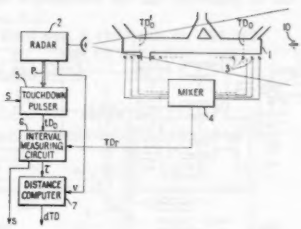
To minimize the size of the memory required, new target hit data either from the same radar processor or another source, if desired, is compared with all of the target hit data in the memory, and if correlation is established, then the new target hit data is not entered into memory, but the old target hit data has its age updated and a record of correlation is made.



### 3,838,421
### AIRPORT RUNWAY SURVEILLANCE SYSTEM WITH MEANS FOR DETERMINING TOUCH-DOWN DISPERSION

Henri M. J. Dasse-Hartaut, Reuil Malmaison, and Marc J. T. Schneider, Saint Cloud, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 19, 1973, Ser. No. 398,702
Claims priority, application France, Oct. 5, 1972, 72.35299
Int. Cl. G01s 9/02
U.S. Cl. 343—5 LS 6 Claims




A device for determining the dispersion (range difference) between actual aircraft landing touch-down and the theoretical touch-down point. Radar range pulse information is compared with a sonic pickup pulse from a vibration transducer which detects wheel contact with the airport surface. In one embodiment, the comparison is made in the relatively slow time base of actual aircraft movement and in an alternative embodiment, the comparison is made in the radar time base, the sonic pulse being used as an enabling pulse in the latter instance.

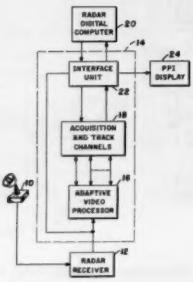
### 3,838,422
### RADAR ADAPTIVE VIDEO PROCESSOR

John L. MacArthur, and Barry E. Raff, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 20, 1973, Ser. No. 399,030
Int. Cl. G01s 9/02
U.S. Cl. 343—7 A 14 Claims

Adaptive thresholding is provided to enhance target detections in the presence of clutter. A closed loop feedback system functions to maintain an average constant false alarm probability within three range intervals. Radar video signals are

sampled, then compared with a thresholding signal comprised of a constant plus the feedback signal. Average constant false alarm probability is maintained by forcing the signal to a constant duty factor by use of pulse stretching. The feedback signal is filtered over the range intervals to adjust for range variations in clutter density.

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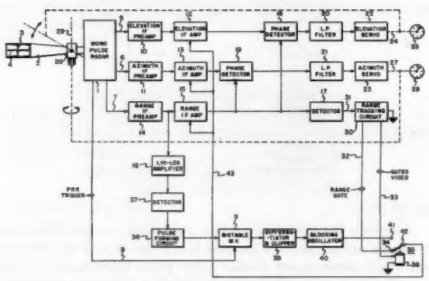
**3,838,423**

## ANTI-JAMMING CIRCUIT FOR ANGLE TRACKING RADARS

**Paul L. Di Matteo, Levittown, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.**

**Filed Oct. 15, 1958, Ser. No. 767,479**
**Int. Cl. G01s *9/16, 9/22***
**U.S. Cl. 343—7.3** **4 Claims**



In a pulsed radar signal tracking receiver, first, second and third means for tracking received signals in the respective polar coordinates of range, elevation and azimuth, said second and third means for tracking being adapted to be actuated solely during the occurrence of a control signal, said first means for tracking in range producing a first output pulse positionable in range and a second output pulse upon the coincidence of said first output pulse and received signal, means resettable at the radar pulse repetition rate for deriving an auxiliary pulse in response to the first signal received during each radar pulse repetition interval, switching means for selectively applying when actuated said first output pulse as said control signal to said second and third means and for selectively applying when deactuated said auxiliary pulse as said control signal to said second and third means, and means for applying said second output pulse to said switching means for actuating said switching means.

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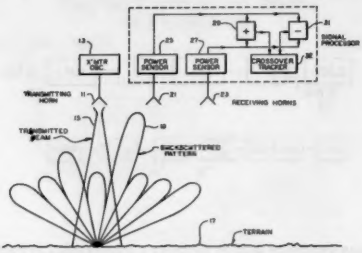
**3,838,424**

## MICROWAVE INTERFERENCE PATTERN SENSOR

**Lester I. Goldfischer, New Rochelle, N.Y., assignor to The Singer Company, Little Falls, N.J.**

**Filed Feb. 20, 1973, Ser. No. 334,011**
**Int. Cl. G01s *9/44***
**U.S. Cl. 343—8** **12 Claims**




A velocity sensing device in which a single radiating horn illuminates a spot on the ground from which power is back scattered to at least a pair of spaced receiving antennas which measure the time required for the back scattered radar speckle pattern developed by the radiation from the horn to traverse the distance between two receiving antennas by determining the frequency at which there is equal power in the sum and difference outputs of a quadratic detector coupled to each antenna, which time is proportional to velocity. Also shown is an arrangement having three antennas which permits measuring velocity in two directions.

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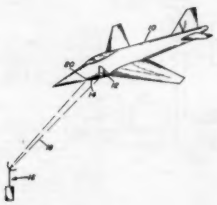
**3,838,425**

## DESIGN FOR REDUCING RADAR CROSS SECTION OF ENGINE INLETS

**Kichio Ishimitsu, Mercer Island; John D. Kelly, Seattle; Douglas S. Miller, Belle View, and Gordon A. Taylor, Seattle, all of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.**

**Filed Mar. 28, 1973, Ser. No. 345,617**
**Int. Cl. B64d *33/02*; H01q *17/00*; H04k *3/00***
**U.S. Cl. 343—18 A** **4 Claims**



A radar-absorbing shield for aircraft engines of the type having inlet cavities comprising a geometrically shaped piece of radar-absorbing material which is movably attached to the fuselage of the aircraft near the engine inlet. The shield can be moved under and in front of the inlet to shield the cavity from waves from surface radar, or it can be moved so that it is flush with the fuselage when high maneuverability is required. A shield may be placed near each engine on the aircraft.

3,838,426

## ELECTRONIC AMBIGUITY-REMOVAL DEVICE FOR PHASE MEASUREMENT RADIONAVIGATION SYSTEMS, MORE PARTICULARLY FOR THE OMEGA SYSTEM

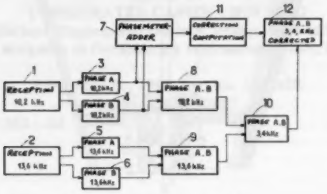
Jean Calves, Nantes, and Rene Gounon, Mauves/Loire, both of France, assignors to Societe D'Etude, Recherches Et Constructions Electroniques Sercel, Carguefou, France

Filed Jan. 30, 1973, Ser. No. 327,975

Claims priority, application France, Mar. 23, 1972, 72.10168

Int. Cl. G01s 1/30

U.S. Cl. 343—105 R 9 Claims



An OMEGA phase-measurement radionavigation system includes an ambiguity-removal device, in which a correction signal for correcting velocity differences at different frequencies is added to a differential phase signal representing the phase factor of a sub-multiple of the basic frequency. Each corrected signal thus obtained has subtracted from it a compensation signal equal to the whole-number differential channel immediately below it, and the resultant of the subtraction visually displayed on an indicator.

3,838,427

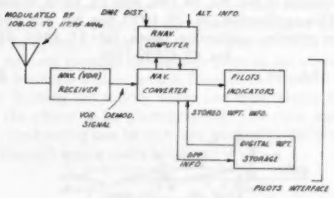
## METHOD AND APPARATUS FOR DIGITALLY INDICATING DIRECT PRESENT POSITION

Edward J. King, Jr., Shawnee Mission; Kenneth R. Ganther, Jr., Lenexa, and Ronald Eugene Grillot, Olathe, all of Kans., assignors to King Radio Corporation, Olathe, Kans.

Filed July 3, 1972, Ser. No. 268,561

Int. Cl. G01s 1/44

U.S. Cl. 343—106 R 4 Claims



A method and apparatus for assisting in the navigation of aircraft using VOR or area navigation (RNAV) information has a digital readout operating in conjunction with a course deviation indicator (CDI) otherwise known as a D-bar. A keyboard is provided to enable the pilot to digitally enter course selection numbers for either VOR or RNAV problems. The subject method and apparatus permits the pilot to merely push a button to immediately compute the required course to center the CDI D-bar and to automatically insert the computed number into the VOR or RNAV system.

3,838,428

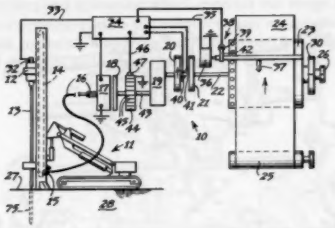
## SOIL IMPEDANCE LOG

Robert W. Benson, and Robert G. Reed, both of Nashville, Tenn., assignors to Harold R. Beaver, Hendersonville, Tenn.

Filed Oct. 1, 1973, Ser. No. 402,116

Int. Cl. G01n 3/32; G01d 5/244

U.S. Cl. 346—33 R 10 Claims



A soil impedance log operatively connected to a track drill, including a transducer for sensing the number of hammer blows upon the drill rod, an electrical system for processing, accumulating and periodically counting the hammer signals for each successive uniform depth of penetration, and recording means operatively connected to the track drill for visually indicating the comparison of the number of hammer blows per unit depth of penetration with the total depth of penetration.

3,838,429

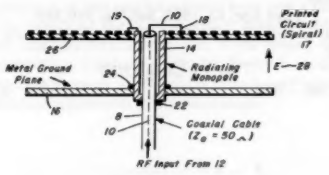
## MINIATURIZED TRANSMISSION LINE TOP LOADED MONOPOLE ANTENNA

Frank Reggia, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 3, 1973, Ser. No. 385,382

Int. Cl. H01q 9/00

U.S. Cl. 343—750 5 Claims



A miniaturized antenna having high radiation efficiency consists essentially of an open circuit transmission line top-loading a short monopole over a metal ground plane. The currents in the two sides of the transmission line, being oppositely directed, tend to cancel each other's effect in the distant field. Thus, only the short vertical monopole contributes to the distant field radiation. The omnidirectional monopole is a constant current radiating element operating at near RF ground potential (high current, low impedance).

3,838,430

## PRINTING APPARATUS FOR MULTIPLE-POINT RECORDER WITH SELECTABLE NUMBER PRINTING

Charles J. Digney, Holland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 215,476, Jan. 5, 1972, abandoned.

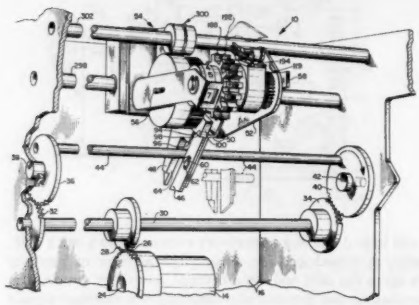
This application Mar. 29, 1973, Ser. No. 346,136

Int. Cl. G01d 15/20, 9/34

U.S. Cl. 346—61 16 Claims

An improved print mechanism for a plural-function recorder having a single record receiver includes a continu-

ously orbiting rod and a plurality of print wheels each of which has a plurality of marking elements on the periphery thereof. The orbiting rod operates successively and repetitively to effect joint step-by-step angular synchronous adjustments of said print wheels to bring each of said marking elements, in turn, into a position for marking said record receiver. The orbiting rod also actuates said print wheels, when so adjusted, into and out of firm marking engagement with said record receiver. Recording in different modes selectively may be effected by a manual adjustment which permits relative axial displacement of said print wheels and thereby printing by one only or both of said print wheels continuously, or by one continuously and the other intermittently.



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**3,838,431**

**APPARATUS FOR THERMALLY RECORDING CHARACTER PATTERNS**

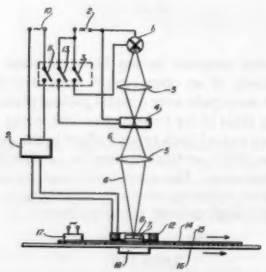
**Horst Germer, Am Schwarzen Berge 38, 3300 Braunschweig, Germany**

**Filed Apr. 12, 1973, Ser. No. 350,389**

**Claims priority, application Germany, Apr. 18, 1972, 2218640**

**Int. Cl. G03g *17/00***

**U.S. Cl. 346—76 R** **8 Claims**



Apparatus is disclosed for recording light images by exposure of a photoconductor thereto to render charge carriers therein mobile, subjecting the mobile charge carriers to a high frequency magnetic field to thereby effect induction heating of the photoconductor where exposed, and utilizing the heat generated in the photoconductor to act on a contacting heat sensitive recording substance.

**3,838,432**

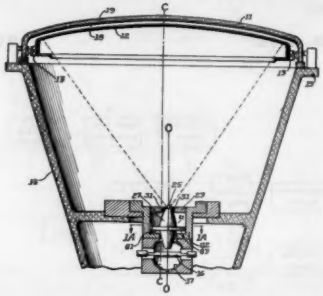
**LIGHTHOUSE EXPOSURE SYSTEM PROVIDING CORRECTED RADIANT ENERGY DISTRIBUTION**

**Yong S. Park, Hanover Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed July 2, 1973, Ser. No. 375,587**

**Int. Cl. G03b *27/00***

**U.S. Cl. 354—1** **10 Claims**



A lighthouse exposure system for more uniformly exposing photosensitive material on a television picture tube face panel. The usual lighthouse problems of (i) over-intense radiation along the face panel parallel to the elongated arc lamp and, (ii) corner-to-corner intensity differential associated with lighthouse light source offset, are both overcome. The intensity contour correcting lenses or shaders (or the like) which are usually disposed between the effective point of light emanation and the face panel are rendered unnecessary. The system employs a light collimator which channels, by means of internal reflection, light from an elongated arc lamp to a collimator tip from which light is then emitted toward the face panel. The surface of the collimator is altered in a predetermined manner so as to interrupt the surface boundary reflection usually occurring therefrom. In a preferred embodiment, the collimator has two frosted areas disposed opposingly and near the tip, with the frosted areas being aligned with the elongated arc lamp.

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**3,838,433**

**ELECTRIC SHUTTER FOR A CAMERA**

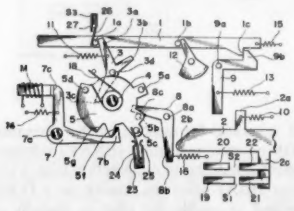
**Toshinori Imura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan**

**Continuation of Ser. No. 54,130, July 13, 1970, abandoned. This application Jan. 29, 1973, Ser. No. 327,856**

**Claims priority, application Japan, July 15, 1969, 44-55834**

**Int. Cl. G03b *7/08***

**U.S. Cl. 354—29** **8 Claims**



The present invention relates to an electric shutter for a camera, in which the aperture of the lens is controlled by a

programmed operation so as to change along with the time by means of a set of sectors. more particularly, the invention relates to an electric shutter for a camera in which the aperture is opened along with the time until the diaphragm is fully opened. When the necessary exposure time is less than the exposure time corresponding to the fully opened aperture then the aperture is opened along with the time only up to a restricted aperture size and continues the exposure at such restricted aperture.

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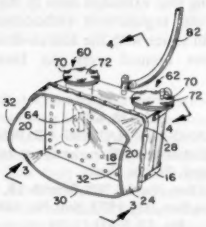
**3,838,434**

## UNDERWATER CAMERA HOUSING

**David Michael Hughes, and David S. Fridge, both of Houston, Tex., assignors to Oceaneering International, Inc., Houston, Tex.**

**Filed June 18, 1973, Ser. No. 371,064**
**Int. Cl. G03b** *17/08*
**U.S. Cl. 354—64** **5 Claims**




An underwater camera housing having a casing for the receipt of a camera with a closure plate to seal the camera in the casing. The casing has suitable camera operating external levers and handles for operating the camera within the casing from outside thereof.

The casing is affixed to the housing which has a diffuser plate in displaced relationship from where the camera casing is attached thereto. Interiorly of the housing are a pair of lighting capsules to light the area which is to be photographed. Extending from the housing is a shroud in the form of a flexible material for placement of the housing and shroud in close juxtaposition to an object to be photographed so that clear water or an optically clear fluid can be pumped into the housing and diffused through the diffuser plate to the shroud. This serves to maintain a clear area in front of the camera for purposes of flushing out murky water and maintaining a proper view of the object to be photographed. The clear water provided to the housing can be from any particular surface source and led through a pipe to the housing.

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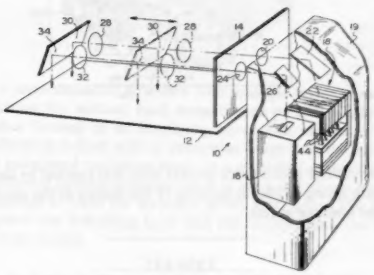
**3,838,435**

## AUTOMATIC IDENTIFICATION AND MAGNIFICATION MARKING SYSTEM FOR MICROGRAPHS

**Herbert J. Mepham, Beaverton, and Gertrude F. Rempfer, Forest Grove, both of Oreg., assignors to Elektros, Inc., Tigard, Oreg.**

**Filed Aug. 11, 1972, Ser. No. 279,827**
**Int. Cl. G03b** *17/24*
**U.S. Cl. 354—109** **14 Claims**

Apparatus for use primarily in an electron microscope for automatically marking a serial number and variable magnification indicia on the photographic plate record produced by the microscope. The system comprises two different image generators, one an electromechanical serial number counter and the other a micron marker generator for generating the magnification indicia. The separate images generated by each of the two generators are transmitted by parallel lens and mirror apparatus to the photographic plate of the microscope and recorded thereon simultaneously with the specimen image. Each of the parallel optical transmitting systems has a fixed objective lens and mirror set which receives the image from a respective generator and a projector lens and mirror set which is movable to enable it to project the image onto photographic plates of different sizes. Each such optical transmitting system




is constructed so as to preserve the size and focus of the images projected from the two generators regardless of the position of the projector lens and mirror. The two image generators comprise a conventional serial number counter and an unconventional magnification indicia generator, the latter comprising an arrangement of bulbs and light transmitting rods which form a variable "micron marker" scale display consisting of two spaced parallel lines and a numeral or numerals indicating the scale distance between the lines in microns. The selective illumination of the proper bulbs and light transmitting rods for a particular display is accomplished automatically through an electrical circuit controlled by the magnification adjustment of the microscope.

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**3,838,436**

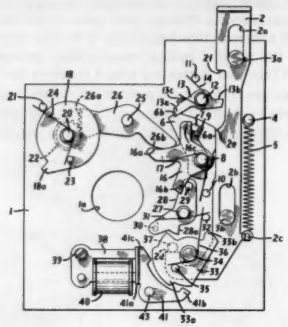
## OPENING DEVICE FOR AN ELECTRONIC SHUTTER

**Masuo Ogihara, and Masanori Watanabe, both of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan**

**Filed May 29, 1973, Ser. No. 364,236**
**Claims priority, application Japan, May 26, 1972, 47-52308**
**Int. Cl. G03b** *9/08*
**U.S. Cl. 354—259** **4 Claims**

A camera having an electronic shutter has an opening device for opening the shutter and a closing device for closing the shutter after the elapse of a predetermined time to effect an exposure. The opening device comprises a rotatable wheel having a gear connected thereto, a pivotable gear sector in mesh with the gear, a turnable opening lever in camming contact with the gear sector, and a spring system biasing the opening lever in such a manner to obtain opening of the shutter at a predetermined opening speed. The spring system consists of a first biasing spring cooperating with the wheel and acting through the gear and gear sector to bias the opening lever in a

direction to oppose the shutter opening and a second biasing spring urges the opening lever in a direction to effect opening



of the shutter with a force greater than that exerted by the first biasing spring to obtain opening of the shutter at the predetermined opening speed.

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**3,838,437**

**PHOTOGRAPHIC LENS ADAPTER RING FOR INTERCHANGEABLE LENSES**

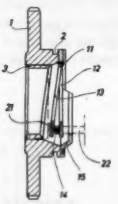
**Heinz Hamm, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany**

**Filed May 23, 1973, Ser. No. 363,269**

**Claims priority, application Germany, June 21, 1972, 2230199; Jan. 5, 1972, 7300295**

**Int. Cl. G03b 9/02**

**U.S. Cl. 354—270** **5 Claims**



An adapter ring to enable interchangeable photographic lenses to be used with a camera somewhat different from the one for which they were specifically designed, and especially to enable operating parts within the lens unit to be operated from the control parts within the camera body, notwithstanding some differences. The adapter ring, in addition to serving as a mount to hold the interchangeable lens unit in position, contains a transmission ring structure which receives motion from the operating rod in the camera body (movable parallel to the optical axis) and transmits such motion to the operating rod in the lens unit, even though the operating rods may not be in exact axial alignment with each other. The transmission ring structure is resilient in an axial direction, so that the transmission rod in the camera body may move through its full range of movement even though the transmission rod in the lens unit may have a more limited range of movement.

**3,838,438**

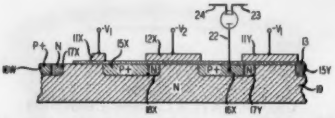
**DETECTION, INVERSION, AND REGENERATION IN CHARGE TRANSFER APPARATUS**

**Donald Jack Silversmith, Morristown, and Robert Joseph Strain, Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.**

**Filed Mar. 2, 1973, Ser. No. 337,669**

**Int. Cl. H01l 11/00, 15/00**

**U.S. Cl. 357—24** **11 Claims**



Improved means are described for detecting and regenerating information in charge transfer apparatus. In those types of such apparatus having means associated with each electrode for producing thereunder asymmetric potential wells, detection is accomplished by disposing a heavily doped zone under a gap between a pair of successive electrodes and extending that heavily doped zone outside the information channel and passively connecting that extended zone to the gate of an IGFET. In a particular regenerator embodiment, an IGFET diode is included in series with the source-drain circuit of an IGFET to improve control over the launching of the regenerated signal.

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**3,838,439**

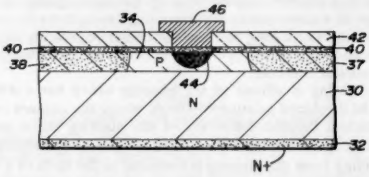
**PHOTOTRANSISTOR HAVING A BURIED BASE**

**James R. Biard, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.**

**Continuation of Ser. No. 20,708, March 18, 1970. This application Nov. 15, 1972, Ser. No. 306,763**

**Int. Cl. H01l 15/00**

**U.S. Cl. 357—30** **9 Claims**



A photosensitive semiconductor device is disclosed which includes a substrate of N-type semiconductor material, with an area or P-type semiconductor material being embedded a preselected distance beneath the surface of the substrate. An electrical contact is connected to the substrate adjacent the central region of the area of P-type material. The central region of the P-type material provides phototransistor operational characteristics, while the junction formed between the N-type and P-type semiconductor materials provides photodiode operational characteristics.

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**3,838,440**

**A MONOLITHIC MOS/BIPOLAR INTEGRATED CIRCUIT STRUCTURE**

**Terence P. McCaffrey, Mountain View, and Paul R. Gray, Orinda, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.**

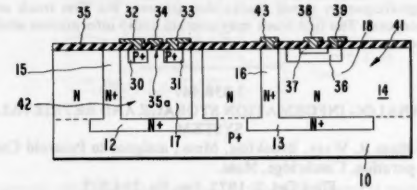
**Filed Oct. 6, 1972, Ser. No. 295,764**

**Int. Cl. H01l 19/00**

**U.S. Cl. 357—43** **5 Claims**

A monolithic integrated circuit structure comprises a wafer of semiconductor material including a semiconductor sub-

strate having an epitaxial layer of semiconductor material thereon, a first region and a second region both of a first conductivity type extending downward from a first surface of said wafer at least partially into said epitaxial layer, said first region being surrounded on all sides except said first surface by a semiconductor material of said first conductivity type of lower resistivity than the first region itself and said second region being partly surrounded by semiconductor material of said first conductivity type of lower resistivity than said second region itself, a semiconductor device of a first type formed in the first region of semiconductor material and a semiconductor device of a second type formed in the second region of semiconductor material, and a lifetime-reducing impurity




located in said second region of semiconductor material whereby the switching speed of the semiconductor device of the second type in said second region is improved without substantially changing the characteristics of the semiconductor device of the first type in said first region. Typically the semiconductor device of the first type comprises an MOS device having source and drain regions and the semiconductor device of the second type comprises a bipolar transistor. The switching speed of the bipolar transistor is changed due to the fact that the second region in which the bipolar transistor is formed is not completely surrounded by the semiconductor material of said first conductivity type of lower resistivity than the second region itself.

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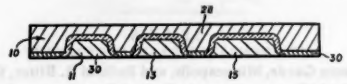
**3,838,441**

## SEMICONDUCTOR DEVICE ISOLATION USING SILICON CARBIDE

**Kenneth E. Bean, Richardson; Paul S. Gleim, and Walter R. Runyan, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.**

**Division of Ser. No. 791,836, Dec. 4, 1968, abandoned. This application June 12, 1970, Ser. No. 57,851**
**Int. Cl. H01l *19/00***
**U.S. Cl. 357—49** **3 Claims**



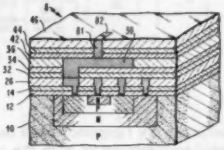

A modified semiconductor substrate structure has been developed for use in the fabrication of multiphase monolithic integrated microcircuits characterized by dielectric isolation, i.e., circuits wherein the active and/or passive components are electrically isolated from one another by virtue of their distribution in an array of monocrystalline semiconductor pockets surrounded by dielectric material. Silicon carbide is shown to be a particular by good dielectric for such use, either alone or in combination with prior dielectrics.

**3,838,442**

## SEMICONDUCTOR STRUCTURE HAVING METALLIZATION INLAID IN INSULATING LAYERS AND METHOD FOR MAKING SAME

**Charles B. Humphreys, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.**

**Continuation of Ser. No. 28,891, April 15, 1970, abandoned. This application June 9, 1972, Ser. No. 261,348**
**Int. Cl. H01l *29/34***
**U.S. Cl. 357—54** **5 Claims**




In a semiconductor structure with multiple levels of metallization on the surface, each metallization pattern is inlaid in trenches formed in an insulating layer. The surface of the metallization is flush with or somewhat lower than the surface of its associated insulating layer. In a preferred embodiment, the different etching characteristics of glass and silicon nitride are utilized to form the trenches in the glass layer. The glass comprises the insulating layer and the nitride forms the bottom of the trench.

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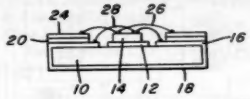
**3,838,443**

## MICROWAVE POWER TRANSISTOR CHIP CARRIER

**David G. Laighton, Linthicum Heights, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.**

**Continuation of Ser. No. 192,851, Oct. 27, 1971, abandoned. This application Mar. 15, 1973, Ser. No. 341,638**
**Int. Cl. H01l *3/00, 5/00***
**U.S. Cl. 357—84** **4 Claims**




A low-cost mounting assembly for a microwave power transistor chip used in hybrid circuits, which minimizes package parasitics while allowing adequate heat transfer from the transistor chip to a heat sink formed from insulating material. The assembly can be formed entirely by silk screen techniques which materially reduces its cost.

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**3,838,444**

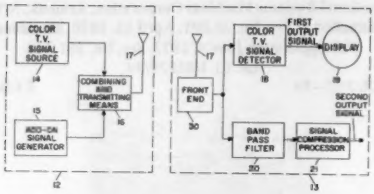
## SYSTEM FOR TRANSMITTING AUXILIARY INFORMATION IN LOW ENERGY DENSITY PORTION OF COLOR TV SPECTRUM

**Bernard D. Loughlin, Centerport, and Charles E. Page, Westbury, both of N.Y., assignors to Hazeltine Research, Inc., Chicago, Ill.**

**Filed Oct. 30, 1972, Ser. No. 302,330**
**Int. Cl. H04n *7/08***
**U.S. Cl. 178—5.2 R** **9 Claims**

Described is a system for compatibly transmitting and receiving both a color TV signal and an add-on signal within the frequency band normally occupied by the TV signal alone. This system utilizes a high frequency-time product signal containing add-on information and having frequency components which are located in a low energy portion of the TV signal. Interference between the add-on and TV signals is minimized

due to the noise-like characteristics of the high frequency-time product add-on signal and to the particular location of




the add-on signal in the TV frequency band thus allowing accurate and reliable transmission of both the add-on and TV signals.

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**3,838,445**

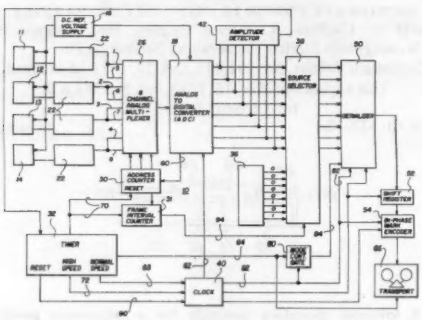
**EVENT RECORDING SYSTEM**

**Frederick B. Cupp, and Gary Van Camp, Rochester, both of N.Y., assignors to EDMAC Associates Inc., Rochester, N.Y.**

**Continuation-in-part of Ser. No. 140,356, May 5, 1971, abandoned. This application May 29, 1973, Ser. No. 364,606**

**Int. Cl. G11b** *5/02*

**U.S. Cl. 360—18** **3 Claims**




Apparatus is disclosed wherein analog signals produced by a plurality of sensors are multiplexed and applied to an analog to digital converter wherein each analog signal is converted to a digital word signal. The apparatus further includes circuitry which is responsive to the digital word signals when any one of such signals represents the amplitude of an analog signal above a selected value for causing a tape transport mechanism to be energized.

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**3,838,446**

**MULTI LAYER MAGNETIC RECORDING TECHNIQUE**

**Hiroaki Otsuka, Tokyo; Norihisa Manabe, Saitama, and Tatsuo Konishi, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai and Nippon Electric Company, both of Tokyo, Japan**

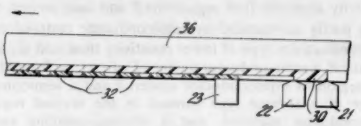
**Filed Nov. 8, 1972, Ser. No. 304,891**

**Claims priority, application Japan, Nov. 12, 1971, 46-90779**

**Int. Cl. G11b** *5/02; H04n 5/78*

**U.S. Cl. 360—19** **7 Claims**

According to this multi-layer recording technique, a relatively low-frequency signal track is recorded on a magnetic tape in the direction of the tape's motion. A relatively shallow portion of the first recorded track along the surface of the magnetic tape is erased, and a plurality of second relatively




high-frequency signal tracks that traverse the first track are recorded. The first track may contain audio information while the second track contains video information.

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**3,838,447**

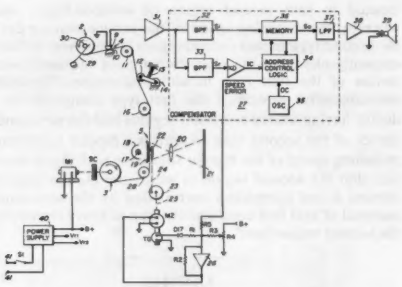
**ANALOG INFORMATION STORAGE AND RETRIEVAL SYSTEM**

**William R. Wray, Brookline, Mass., assignor to Polaroid Corporation, Cambridge, Mass.**

**Filed Oct. 2, 1972, Ser. No. 294,317**

**Int. Cl. G11b** *5/00;* **G06f** *13/00*

**U.S. Cl. 360—26** **13 Claims**




An information storage and retrieval system in which an information signal is recorded on a record medium simultaneously with a pilot reference signal. A reproducing system is provided in which samples of the recorded information are read from the record into an analog storage register at a rate determined by the reproduced pilot signal, and read out of the analog storage register at a fixed rate to compensate for differences in the speeds at which the information is stored on, and retrieved from, the record.

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**3,838,448**

**COMPENSATED BASELINE CIRCUIT**

**Lawrence Garde, Minneapolis, and Rolland R. Ritter, St. Paul, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.**

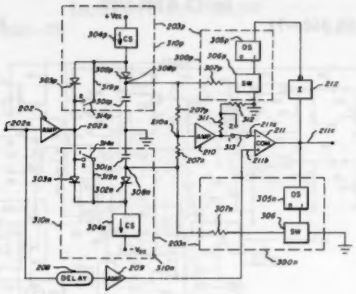
**Filed Feb. 7, 1973, Ser. No. 330,370**

**Int. Cl. G11b** *5/44*

**U.S. Cl. 360—45** **44 Claims**

Apparatus and method for decreasing decoding errors in data encoding of the type where the relative time of occurrence of successive peaks determines the data content, and the errors result from peak shift caused by pulse crowding. In a preferred embodiment, the data signal is differentiated and delayed, and a baseline signal generator provides a compensated baseline signal having a value equal to the arithmetic mean of the immediately adjacent positive and negative signal

peaks of the differentiated data signal, and the decoded signal has a first value after the delayed differentiated data signal crosses the compensated baseline in a positive direction and a



second value after the compensated baseline signal is crossed by the delayed differentiated data signal in the opposite direction.

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**3,838,449**

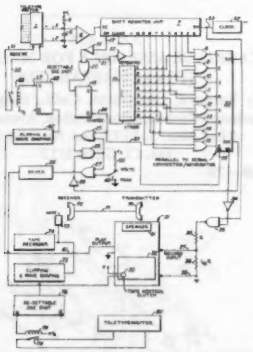
**METHOD AND SYSTEM FOR DIGITAL RECORDING**

**John C. Sims, Jr., Dusbury, Mass., assignor to New England Research Associates, Inc., Bedford, Mass.**

**Filed Mar. 13, 1973, Ser. No. 340,782**

**Int. Cl. G11b** *15/20, 27/34, 31/00*

**U.S. Cl. 360—52** **20 Claims**



A method and system for digital character-by-character or incremental recording in which the spaces of the data signals are recorded instead of the marks to prevent a velocity modulated signal from being recorded in the interrecord gaps. The signal recorded is a pulse carrier signal which is generated in correspondence with the spaces of the data signal. An environmental water monitoring apparatus for character-by-character recording of a digital word indicative of analog measurements taken by a plurality of sensors which are periodically monitored.

**3,838,450**

**THERMOMAGNETIC RECORDING AND MAGNETO-OPTIC READING OF A MEDIUM HAVING BISMUTH IONS IN A GARNET STRUCTURE**

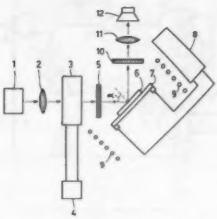
**Piet Frans Bongers; Stefan Wittekoek, and Theo Johan August Popma, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed Jan. 5, 1973, Ser. No. 321,331**

**Claims priority, application Netherlands, Jan. 8, 1972, 7200296; Oct. 7, 1972, 7213622**

**Int. Cl. G01d** *15/10, 15/12*

**U.S. Cl. 360—59** **6 Claims**



A device for the thermomagnetic recording and magneto-optical reading of data by means of the Kerr effect, in which the magnetisable recording medium consists of a monocrystalline or polycrystalline material having a garnet structure in which bismuth ions are present in dodecahedral sites and trivalent iron ions are present in tetrahedral sites. An example of a material having such a composition is $Bi_y^{3+}Z_{3-y}^{3+}Fe_3^{3+}O_{12}^{2-}$, wherein Z is a rare earth ion.

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**3,838,451**

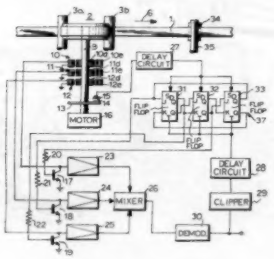
**MAGNETIC TAPE REPRODUCING SYSTEM HAVING SECONDARY SHORTING OF A ROTARY TRANSFORMER FOR HEAD SWITCHING**

**Mineo Mino, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan**

**Filed June 15, 1973, Ser. No. 370,452**

**Int. Cl. H04n** *5/78;* **G11b** *5/52*

**U.S. Cl. 360—64** **4 Claims**

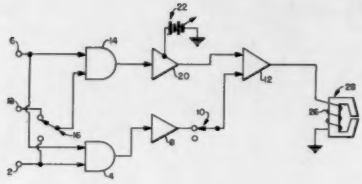


A magnetic video tape recorder has a plurality of rotary heads, transistor switching circuits are connected to secondary windings of rotary transformers which are coupled to each of the rotary heads so as to short the secondary winding when a control signal is applied to the base thereof. The control signal serves to control the operation of the transistor switching circuits in such a way that only one complete field signal at a time from among the head output signals is supplied to succeeding reproducing circuits, so that there is reproduced a still or a slow-motion picture.

## 3,838,452
## RECORDING AMPLIFIER FOR BIAS-TYPE MAGNETIC RECORDING

William G. Royce, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 7, 1972, Ser. No. 313,108
Int. Cl. G11b 5/44
U.S. Cl. 360—66 2 Claims

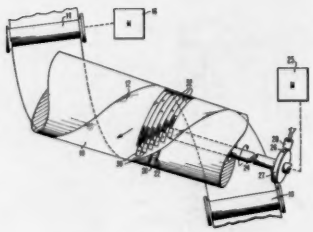


A bias-type recording system using bias and data input signals which are amplified separately and applied to a signal summing amplifier which isolates the bias signal from the data signal by cancelling the bias signal collector current in a pair of transistor energized by the data and bias signals in a Class C mode of operation while allowing the data signal to vary the average collector current which appears as an output signal for application to a magnetic recording head.

## 3,838,453
## TRACK FOLLOWING SYSTEM FOR MAGNETIC TAPE RECORDER

Walter S. Buslik, and Dale H. Pennington, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1972, Ser. No. 254,669
Int. Cl. G11b 21/04, 21/10
U.S. Cl. 179—100.2 T 14 Claims

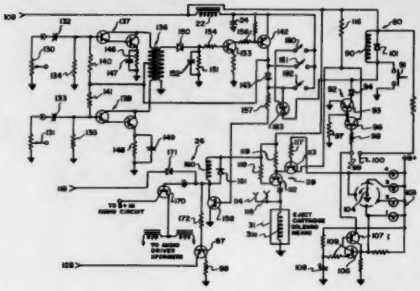


A helical or transverse track tape recorder used for data recording and readback utilizes a scanning magnetic head that follows recorded data tracks precisely. The tape has prerecorded pairs of servo reference signals of opposite characterization that are located adjacent to the beginning of each data track, the pairs of reference signals straddling the center line drawn through and extending from each track. A servo system responsive to the sensed position of the scanning head relative to the paired reference signals compensates for any displacement of the data tracks relative to the scan path of the head. Read after write during the same scan period is also accomplished.

## 3,838,454
## TAPE PLAYER CARTRIDGE CONTROL CIRCUIT

William B. Huber, Park Forest, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 80,263, Oct. 13, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,151
Int. Cl. G11b 5/00
U.S. Cl. 360—71 5 Claims

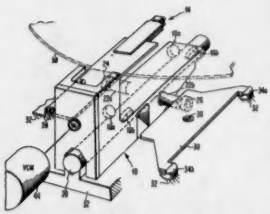


A tape player cartridge control system includes a speed control for operating the drive motor which transports the tape within a cartridge at a fixed speed, and includes circuit means to effect a fast forward condition of the tape under selected conditions when it is desired to advance the tape quickly to the next prerecorded selection on the tape. The speed control utilizes square waves from a one-shot multivibrator and square waves from an amplifier stage, and both square wave signals are applied out-of-phase to a matrix. When both square wave signals are of the same frequency, the output of the matrix is zero and the motor will run at a preset constant speed. The control system also includes an ejector circuit which automatically ejects the tape cartridge in accordance with an AND logic arrangement that occurs when the tape head is in the last track condition and the end-of-travel of the tape in the cartridge is sensed by a pair of contacts.

## 3,838,455
## HEAD CARRIAGE ASSEMBLY FOR MAGNETIC DISK STORAGE APPARATUS

Cecil Percy Barnard, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,119
Int. Cl. G11b 5/52
U.S. Cl. 360—78 9 Claims

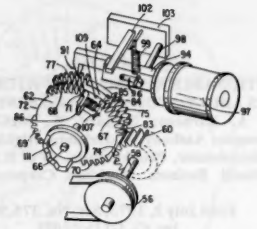


A carriage assembly, useful in magnetic disk apparatus that employs movable accessing head assemblies, includes a channel-shaped body having paired angularly disposed bearings which ride on a cylindrical guide support rod. A high degree of stability is achieved by a sprung way that provides preload forces at one side of the carriage, and a fixed way at the other side of the carriage.

## 3,838,456
## TAPE HEAD INDEXING AND SHIFTING APPARATUS

Thomas C. Cayton, Jr., Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 186,160, Oct. 4, 1971, Pat. No. 3,781,018.
This application May 14, 1973, Ser. No. 359,654
Int. Cl. G11b *21/08, 23/04*
U.S. Cl. 360—78 8 Claims

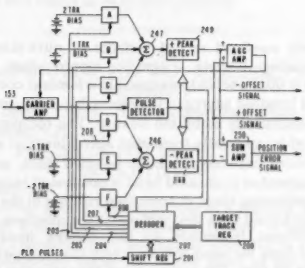


Apparatus utilizing the capstan flywheel of a multitrack tape recorder and/or reproducer to power apparatus for shifting the transducer head from one tape track to another, including gear means linking the flywheel to the cam which shifts the position of the transducer head, and a solenoid activated at the end of a tape track, causes engagement of the gear linkage, and means for automatically disengaging the shifting apparatus after the transducer head has been shifted and readying the same for future shifting.

## 3,838,457
## TRACK SEEKING AND FOLLOWING SERVO SYSTEM

Ronald S. Palmer, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 5, 1973, Ser. No. 376,775
Int. Cl. G11b *5/48*
U.S. Cl. 360—78 6 Claims

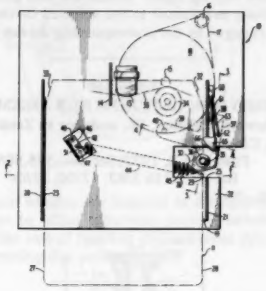


In a magnetic disk recording device, a track following system for detecting servo signals to distinguish one track from another within a repeating group of tracks and to add a biasing signal to said detected signal whenever the transducing head is located more than one-half track from the target track. Means for producing a position error signal of linear slope over the group number of tracks is disclosed enabling the electrical offsetting of the transducing head up to one-half the group number of tracks by modifying the position error signal. Seeking means are provided to rapidly move the transducing head toward the target track from a position more than plus or minus one-half the group number of tracks and means are provided for counting the group number and the track number within the group.

## 3,838,458
## MAGNETIC TAPE REPRODUCING APPARATUS

Makoto Nakagome, and Shohgo Takeuchi, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed June 7, 1972, Ser. No. 260,634
Int. Cl. G11b *5/00*
U.S. Cl. 360—93 6 Claims

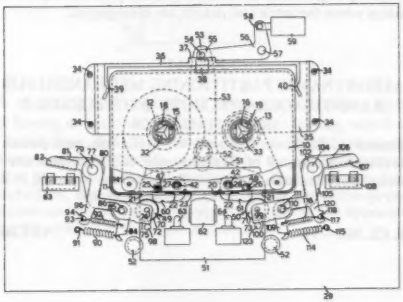


A retention means for holding a tape cartridge in the play position in a tape player is mounted on a pivoted plate and is urged into engagement with a recess in the side of the cartridge by an elongated helical coil spring of low spring constant. A motor actuation switch is operated by the cartridge during insertion at a point in advance of the play position, so that the tape drive capstan has accelerated to operating speed when the cartridge arrives at the play position.

## 3,838,459
## APPARATUS FOR RECORDING AND/OR PLAYING BACK A MAGNETIC TAPE CONTAINED IN A CASSETTE

Giuseppe Bettini, Ivrea, and Carlo Romano, Dora, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jan. 26, 1972, Ser. No. 220,992
Claims priority, application Italy, Jan. 28, 1974, 67277/71
Int. Cl. G11b *15/26*
U.S. Cl. 360—96 9 Claims



The apparatus is used for recording and/or playing back a magnetic tape contained in a cassette provided with locating holes extending through its thickness and with apertures disposed along at least one of its edges through which the exposed tape can be engaged by the elements entraining the tape and by a transducer. The apparatus comprises a supporting chassis on which are mounted the entraining elements, the transducer and means adapted to locate the tape cassette on the chassis by acting on the outer faces of the cassette and on the locating holes. The entraining elements consist of a first

and a second pair of rollers, each pair comprising a driving and a driven roller, each pair acting selectively to transport the tape forward and backward respectively. The apparatus further comprises an actuating device adapted to move both the driven rollers simultaneously into the proximity of the respective driving rollers and to move the transducer into contact with the tape, and a selectively actuable mechanism for bringing the selected driven roller into pressure contact with the respective driving roller. Means are also provided for imparting a rotary movement to the selected driving roller after it has been engaged by the corresponding driven roller.

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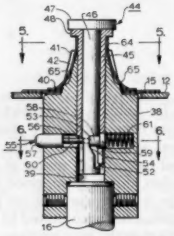
**3,838,460**

**VIDEO DISK LATCHING HUB ASSEMBLY**

**David S. Stewart, Palatine, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.**

**Filed July 2, 1973, Ser. No. 375,586**
**Int. Cl. G11b** *5/82, 17/00, 25/04*
**U.S. Cl. 360—99** **10 Claims**



Apparatus for releasably securing a video disc for playback includes a hub having an axial bore and means for supporting and indexing the disc. A post is journalled within the hub bore for axial displacement between an elevated quiescent position and a depressed actuated position. The post includes a detent which is engageable by a latch to releasably captive the post when it is displaced to its actuated position. A biasing arrangement, in the form of multiple spring fingers, is coupled to the post and engageable with an indexed disc when the post is displaced to its actuated position to secure the disc upon the hub. The spring fingers also serve to return the post to its quiescent position when the latch and detent are disengaged.

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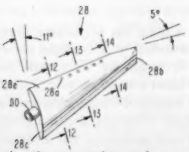
**3,838,461**

**AERODYNAMIC PARTITIONING MECHANISM FOR RANDOM ACCESS MEMORY WITH FLEXIBLE ROTATING DISCS**

**Raymond A. Barbeau; Bernard W. McGinnis, and James A. Weidenhammer, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed July 2, 1973, Ser. No. 375,987**
**Int. Cl. G11b** *15/00*
**U.S. Cl. 360—99** **10 Claims**



A blade with distinctive aerodynamic contours partitions the rotational path of a laminar configuration of continuously rotating flexible magnetic disc foils at randomly selected disc interface positions. The blade thrusts deeply into the pack with distinctively skewed motion gradually and progressively distorting the rotational path of the encountered random segment of discs. Air circulating under slight pressure through passages in the blade into the interface opening formed by the blade operates to suppress fluttering of the discs in the complementary (undeformed) segment.

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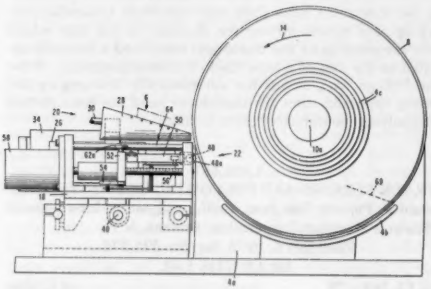
**3,838,462**

**PARTITIONABLE DISC MEMORY WITH FLEXIBLE DISCS AND CONFORMALLY SUSPENDED HEAD**

**Raymond A. Barbeau; Bernard W. McGinnis, both of Poughkeepsie; Anthony W. Orlando, Highland, and James A. Weidenhammer, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.**

**Filed July 2, 1973, Ser. No. 375,989**
**Int. Cl. G11b** *15/00*
**U.S. Cl. 360—99** **13 Claims**

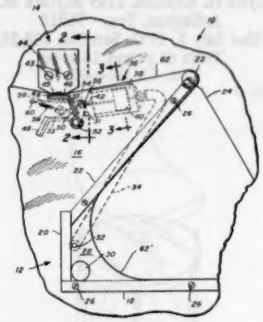


Normally confined record surfaces of ultra-thin continuously rotating flexible magnetic record discs (nominal thickness 0.0017 inches), arranged in a laminar configuration of several hundred aggregately deformable discs, are accessed by aerodynamically stabilized flexure. The rotational path is partitioned by an axially translated airfoil blade at axial interface positions between randomly selected discs, and a semi-rigidly suspended contoured head is positioned independently of the partitioning blade in compliant relation to the surface of revolution traced by a disc surface at the interface. That surface conforms intimately to the convex head contour, separated from the head only by a very thin hydrodynamically generated air film. The arrangement thus provides high lineal density of bit recording. Tendency of the partitioned discs to flutter during the partitioning action and thereby potentially interfere with or delay positioning of the head, is counteracted by specific design features of the disclosed partitioning and stabilizing assemblies. The conformal position of the head is established at a peripheral zone of the interface record surface and glides radially to a selected track position of the record without interruption of the conformal relation. The aggregate assembly is characterized by volumetric efficiency (recording bit densities in excess of $10^{10}$ bits in a volume of 250 cubic inches) and access efficiency (1 sec). Plural partitioning and transducing mechanisms can be associated with a single pack; either as stand-by redundant elements or to provide access to record surfaces on opposite sides of partition interfaces. Plural packs are aggregatable on a common spindle or on separate spindles.

## 3,838,463
## AUTOMATIC FLUX SHIELD ENGAGEMENT MECHANISM

**Floyd R. Ysbrand, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.**

**Filed Jan. 7, 1972, Ser. No. 216,092**
**Int. Cl. G11b** *5/48, 21/24*
**U.S. Cl. 360—128** **5 Claims**



This invention relates to improvements in magnetic tape transport mechanisms and provides an automatic means for engaging a flux shield to the back of the magnetic tape while it is in contact with the magnetic head assembly. An engagement mechanism is mounted for movement of the shield between two positions, a first position in which the shield is adjacent the back of the magnetic tape and a second position in which the flux shield is removed from the vicinity of the magnetic tape. A vacuum actuator is used to control the position of the flux shield. The actuator is responsive to the low pressure in the vacuum pocket of a vacuum column. When vacuum is applied to the vacuum column and tape is drawn into the column, the lowered pressure within the vacuum pocket is communicated by conduit means to the actuator, which moves to a first position where it moves the flux shield to its first position. When the vacuum is removed, the actuator moves the flux shield to its second position.

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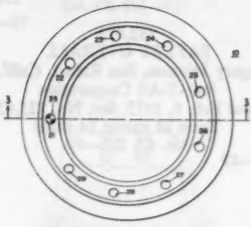
## 3,838,464
## RETAINING RING FOR MAGNETIC DISC PACK ASSEMBLY

**Daniel C. Doyle, Nashua, N.H., assignor to Nashua Corporation, Nashua, N.H.**

**Filed Oct. 24, 1972, Ser. No. 300,160**
**Int. Cl. G11b** *25/00*
**U.S. Cl. 360—137** **5 Claims**

An improved annular retaining ring in a rotating disc pack assembly of a magnetic disc memory system. A plurality of cavities for counterbalance weights are provided in a uniform angular distribution about the center point of the retaining ring. The cavities are inset from the outer boundary in a top surface of the retaining ring so that all spatial points within the cavities are a lesser distance from the center of the ring than any point included in the outer boundary of the top surface.



Counterbalance weights are inserted in the appropriate ones of the cavities to offset otherwise present unbalanced moments about the axis of rotation and minimize dynamic instability in the rotating disc pack assembly.

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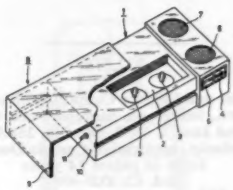
## 3,838,465
## RECORDING AND/OR PLAYBACK APPARATUS WITH BATTERY INDICATION CONTROLLED BY COVER POSITION

**Karl Fischer, and Anton Muller, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.**

**Filed May 16, 1973, Ser. No. 360,772**
**Claims priority, application Germany, May 25, 1972, 7219613**
**Int. Cl. G11b** *5/00;* **H01m** *31/04;* **G01n** *27/42*
**U.S. Cl. 360—137** **2 Claims**



A recording and/or playback apparatus for battery operation having an indicator for battery voltage testing, which can be switched on and off by means of a switching element comprising a sensor which is actuated by means of a movable cover for a cassette compartment, the indicator being switched on, or being switched to stand by and subsequencly switched on by operating one of the controls of the apparatus, when the cover is in the opened position.

# DESIGNS

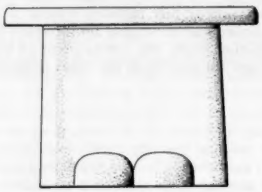
SEPTEMBER 24, 1974

**232,875**
**SAFETY OVERALL**
**Leonard Gregory Johnson, San Rafael, Calif., assignor to Safe-T-All Corporation**
**Filed Feb. 9, 1972, Ser. No. 225,024**
**Term of patent 14 years**
**Int. Cl. D2—*02***
**U.S. Cl. D2—29**

**232,876**
**BOOT**
**David Cupples and Eleanor Cupples, both of 823 Broadway Ave., Saskatoon, Saskatchewan, Canada**
**Filed June 1, 1972, Ser. No. 258,929**
**Claims priority, application Canada Dec. 2, 1971**
**Term of patent 14 years**
**Int. Cl. D2—*04***
**U.S. Cl. D2—272**

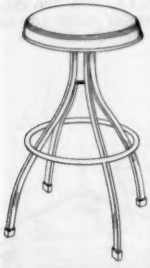
**232,877**
**COMBINED TABLE AND TERRARIUM**
**Lynn H. Kephart, 2109 Skylark St., Arlington, Tex. 76010**
**Filed July 3, 1972, Ser. No. 268,283**
**Term of patent 14 years**
**Int. Cl. D6—*03***
**U.S. Cl. D6—3**

**232,878**
**CHILD'S TABLE**
**Jerrold J. Krumholz, West Orange, Herbert H. V. Reisgen, Westfield, and George C. Kress, Union, N.J., assignors to Kusan, Inc., Nashville, Tenn.**
**Filed Mar. 30, 1973, Ser. No. 346,665**
**Term of patent 14 years**
**Int. Cl. D6—*03***
**U.S. Cl. D6—5**

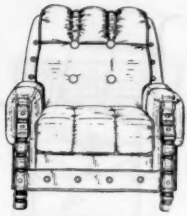


232,879
STOOL
Clair A. Samhammer, Orange, Calif., assignor to Samsonite Corporation, Denver, Colo.
Filed Jan. 12, 1973, Ser. No. 323,054
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—35

232,880
STOOL
Clair A. Samhammer, Orange, Calif., assignor to Samsonite Corporation, Denver, Colo.
Filed Jan. 12, 1973, Ser. No. 323,053
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—35

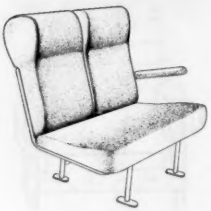


232,881
CHAIR
Stapleton Long, 1629 Christmas Drive, Morristown, Tenn. 37814
Filed Feb. 20, 1973, Ser. No. 334,147
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—37



232,882
CHAIR
Stapleton Long, 1629 Christmas Drive, Morristown, Tenn. 37814
Filed Feb. 20, 1973, Ser. No. 334,146
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—39

**232,883**
**SEAT**
Basil Louis Macnab, 178 Bell St., Ingersoll, Ontario, Canada
Filed Aug. 15, 1972, Ser. No. 280,860
Claims priority, application Canada July 4, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



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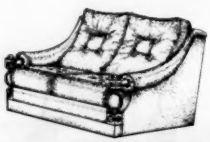
**232,884**
**SEAT**
Howard I. Niederman, 3757 S. Ashland Ave., Chicago, Ill. 60609
Filed Aug. 23, 1972, Ser. No. 283,187
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—63



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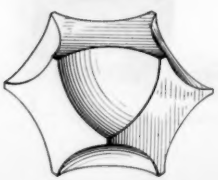
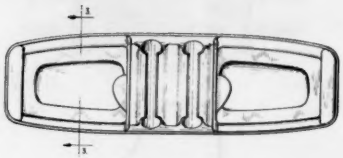
**232,885**
**BOOKEND**
Jerry L. Cramer, Watchung, N.J., assignor to Texasgulf, Inc.
Filed Aug. 14, 1972, Ser. No. 280,676
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—106



**232,886**
**COMBINED SKI AND SKI POLE RACK**
Robert J. Borraccio, 7720 Stenton Ave., Philadelphia, Pa. 19118
Filed June 21, 1972, Ser. No. 264,709
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



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**232,887**
**STAMP CASE**
Takaji Funahashi, 1, 2-chome, Kitatakajo-mochi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan
Filed Jan. 30, 1973, Ser. No. 328,141
Claims priority, application Japan Aug. 31, 1972
Term of patent 14 years
Int. Cl. D20—*02*; D6—*99*
U.S. Cl. D6—130

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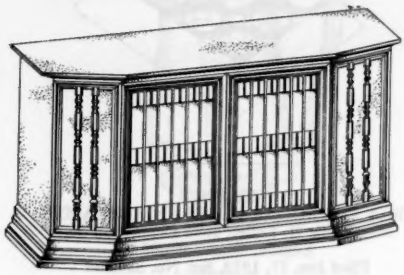
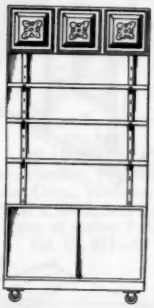
**232,888**
**DISPLAY STAND**
Delmer D. McCommon, Newport Beach, Calif., assignor to Packers Bar M Meat Co., Los Angeles, Calif.
Filed Nov. 13, 1972, Ser. No. 305,703
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153

232,889
CABINET
Robert Levine, Roslyn, N.Y., assignor to Capehart Corporation, New York, N.Y.
Filed May 31, 1972, Ser. No. 258,475
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154

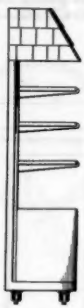


232,890
LINGERIE CHEST OR SIMILAR ARTICLE
Huey T. Keller, High Point, N.C., assignor to Gillespie Furniture Company, Los Angeles, Calif.
Filed Dec. 15, 1972, Ser. No. 315,596
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154

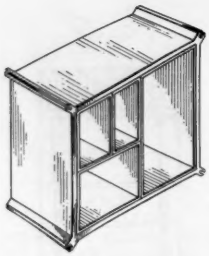
232,891
DISPLAY FIXTURE
Edwin C. Parrotte, Coral Gables, Fla., assignor to Golf, Inc., Miami Springs, Fla.
Filed June 14, 1971, Ser. No. 152,932
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

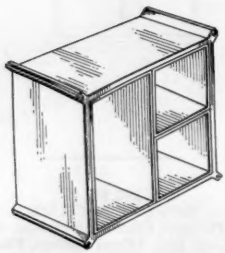


232,892
DISPLAY FIXTURE
Edwin C. Parrotte, Coral Gables, Fla., assignor to Golf, Inc., Miami Springs, Fla.
Filed June 14, 1971, Ser. No. 153,131
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

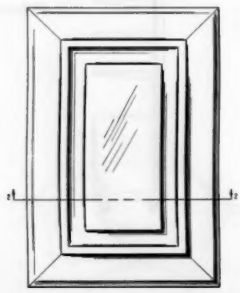


232,893
SHELF MODULE
Billy Moretini, Chicago, Ill., assignor to International Design Corporation, Chicago, Ill.
Original design application Nov. 10, 1971, Ser. No. 197,643, now abandoned. Divided and this application May 30, 1973, Ser. No. 365,160
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189

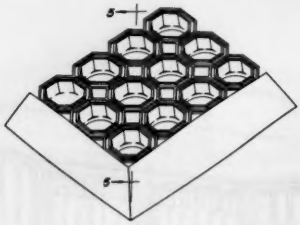




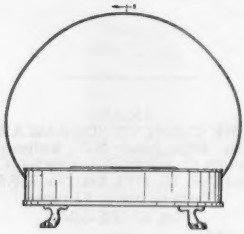
232,894
CABINET DOOR
Warren A. Dillen, Louisville, Ky., assignor to H. J. Scheirich Company
Filed Sept. 6, 1972, Ser. No. 286,665
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



232,895
RUBBER MAT
Arthur Bell, 12 Rogers Drive, Stoughton, Mass. 02072
Filed Aug. 3, 1972, Ser. No. 277,744
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



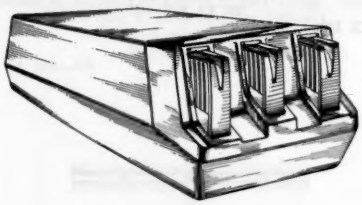
232,896
TRAY FOR SUGAR CUBES AND CREAMER
Marguerite H. Entler, 2096 Charnelton St., Eugene, Oreg. 97405
Filed Jan. 17, 1973, Ser. No. 324,500
Term of patent 7 years
Int. Cl. D7—*99*
U.S. Cl. D7—58



232,897
ELECTRIC PERCOLATOR
Ronald B. Kemnitzer, Lisle, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 29, 1973, Ser. No. 327,364
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—62

232,898
**ELECTRIC PERCOLATOR**
Bernard B. Bluestein, Des Plaines, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 29, 1973, Ser. No. 327,365
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—62

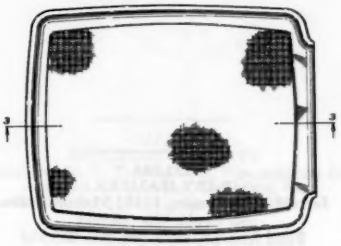
232,899
**COMBINED SCABBARD AND KNIFE SHARPENER**
Peter K. Bayly, Melbourne, Victoria, Australia, assignor to Wiltshire Cutlery Company Proprietary Limited, Tottenham, Victoria, Australia
Filed Apr. 24, 1972, Ser. No. 247,239
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74



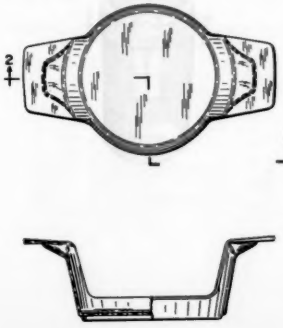
232,900
**INSULATED BOTTLE**
Vernon D. Bell, Westerly, R.I., and Charles L. Seltz, Ann Arbor, Mich., assignors to King-Seeley Thermos Co.
Filed Apr. 20, 1973, Ser. No. 352,942
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—77

232,901
**INSULATED BOTTLE WITH ATTACHED CUP**
Vernon D. Bell, Westerly, R.I., and Charles L. Seltz, Ann Arbor, Mich., assignors to King-Seeley Thermos Co.
Filed Apr. 20, 1973, Ser. No. 352,943
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—77

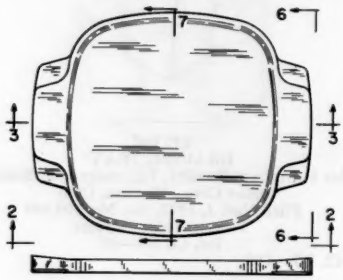
232,902
**DRAINER TRAY**
Charles F. Molzen, Yardley, Pa., assignor to Rubbermaid Sales Corp., Wooster, Ohio
Filed Nov. 1, 1972, Ser. No. 302,645
Term of patent 7 years
Int. Cl. D7—*99*
U.S. Cl. D7—188



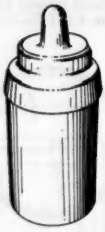
232,903
**SUPPORTING CRADLE FOR A SERVING DISH OR THE LIKE**
Glenn B. Beckman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 19, 1973, Ser. No. 342,761
Term of patent 14 years
Int. Cl. D7—*01, 06*
U.S. Cl. D7—130



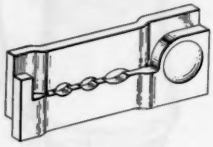
232,904
**REMOVABLE COVER FOR CULINARY VESSELS**
Richard W. Gregor, Corning, and J. Roger Joy, Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 13, 1973, Ser. No. 351,017
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—131




232,905
**BABY HAMPER**
Jerrold H. Bailenson, 12883 Maison Ladue, St. Louis, Mo. 63141
Filed Aug. 28, 1972, Ser. No. 283,905
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—163

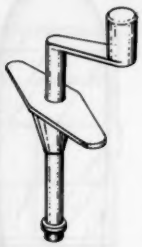


232,906
**CRIMPING TOOL**
Gustaf Rudolph Lawson, Willingboro, N.J., assignor to AMP Incorporated, Harrisburg, Pa.
Filed June 8, 1972, Ser. No. 261,139
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51



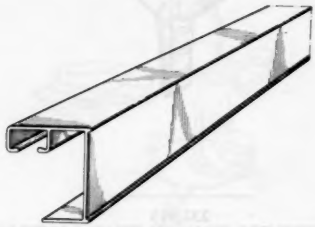
232,907
**RAKE**
Conrad A. Yankee, 103 Seaview Ave., West Haven, Conn. 06516
Filed July 23, 1973, Ser. No. 381,371
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—13

232,908
VALVE RESEATER
Martin Nathan Kaplan, 11610 Cantlay St., North Hollywood, Calif. 91605
Filed May 19, 1972, Ser. No. 255,307
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—59

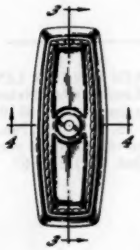


232,909
TELESCOPIC LEVERING TOOL FOR WINCHES AND CHAIN BINDERS
Robert R. Zeemin, Box 807, Albany, Oreg. 97321
Filed May 5, 1972, Ser. No. 250,861
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—88

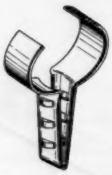
232,910
TRACK RAIL FOR CURTAINS AND THE LIKE
Jean-Pierre Duperrex, 44 Rue des Moulins, Yverdon, Switzerland
Filed Feb. 5, 1973, Ser. No. 329,317
Claims priority, application Switzerland Aug. 4, 1972
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—208



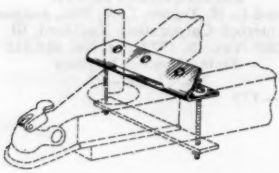
232,911
ESCUTCHEON PLATE
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,325
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



232,912
CABLE FASTENER
Torvald A. S. Hagelberg, Sparvstigen 6, S-435 00 Molnlycke, Sweden
Filed Apr. 23, 1973, Ser. No. 353,518
Claims priority, application Sweden Oct. 23, 1972
Term of patent 7 years
Int. Cl. D8—*08*
U.S. Cl. D8—230



232,913
BRACKET FOR TRAILER SWAY CONTROL DEVICE
William L. Rendessy, 8028 N. 14th Place, Phoenix, Ariz. 85020
Filed June 12, 1973, Ser. No. 369,262
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—236



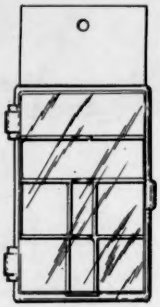
232,914
CHAIN ROLLER LINK
Vernon G. Kessler, 6747 Nebraska Ave., Omaha, Nebr. 68104
Filed May 15, 1972, Ser. No. 253,695
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D8—261

232,915
BOTTLE
Kurt Becker, Obernkirchen, Germany, assignor to Hermann Heye, Obernkirchen, Germany
Filed Aug. 28, 1970, Ser. No. 24,746
Claims priority, application Germany Mar. 6, 1970
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—135

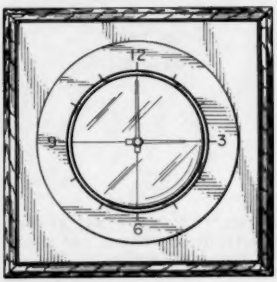
232,916
JAR OR THE LIKE
Franco Bettonica, Milan, Italy, assignor to Perlier S.p.A., Milan, Italy
Filed May 30, 1972, Ser. No. 258,198
Claims priority, application Italy Mar. 22, 1972
Term of patent 7 years
Int. Cl. D9—*01*
U.S. Cl. D9—164

232,917
RAZOR HOLDER
William T. Vincent, 12 Gabriel Drive, Bryans Road, Md. 20616
Filed May 22, 1972, Ser. No. 255,937
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186

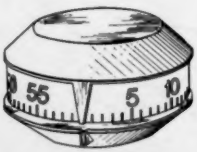
232,918
COMBINED PACKAGING AND DISPLAY CONTAINER
Martin Nathan Kaplan, 11610 Cantlay St., North Hollywood, Calif. 91605
Filed May 19, 1972, Ser. No. 255,308
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



232,919
WALL CLOCK
John Cuccio, Westport, Conn., assignor to Sybron Corporation, Rochester, N.Y.
Filed Nov. 15, 1971, Ser. No. 199,076
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—25



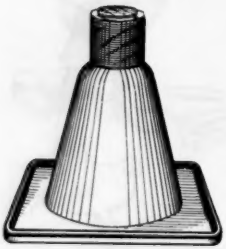

232,920
TIMER
Raoul E. Rodriguez, Denver, Colo., assignor to International Register Company, Spring Grove, Ill.
Filed Dec. 11, 1972, Ser. No. 313,975
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—40



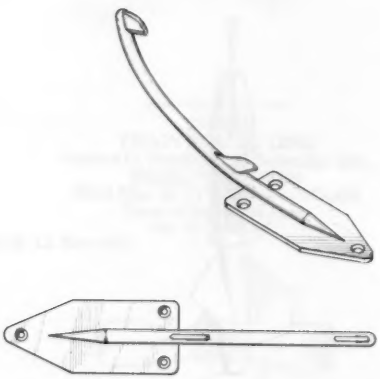

232,921
WHEEL BALANCING UNIT
Andrew J. Saulnier, 10820 Woodfair Road, Fairfax Station, Va. 22039
Filed Apr. 28, 1972, Ser. No. 248,782
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—82

232,922
FLOW METER
Shale J. Niskin, 9400 SW. 63rd Court, Miami, Fla. 33156
Filed Mar. 29, 1972, Ser. No. 239,404
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96

232,923
**ELECTRIC HIGHWAY EMERGENCY BEACON**
John K. Lawlor, 2080 E. Grand, Escondido, Calif. 92027
Filed Nov. 7, 1972, Ser. No. 304,364
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—114



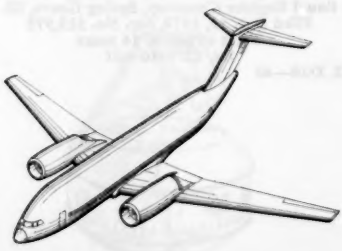
232,924
**VEHICULAR SAFETY DEVICE OR THE LIKE**
Kenneth D. Kramb, Portage, and Walter J. Isabell, Kalamazoo, Mich., assignors to K.I.C. Incorporated, Kalamazoo, Mich.
Filed Nov. 10, 1972, Ser. No. 305,366
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—7



232,925
**SLED WITH SKI ATTACHMENTS**
Richard W. Turner, 1786 Tubbs St., Thousand Oaks, Calif. 91360
Filed July 14, 1972, Ser. No. 271,734
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—9

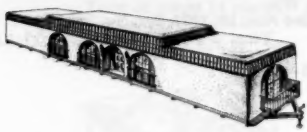
232,926
**AIRCRAFT**
Lawrence Bernard Rellis, 10460 SW. 163rd St., Miami, Fla. 33157
Filed Mar. 20, 1972, Ser. No. 236,577
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D12—80

232,927
**TWIN ENGINE-OVER-WING AIRPLANE**
David G. Blattner, Mercer Island, and Robert H. Drinnon, Kent, Wash., and Stefano P. Ruocco, Chiavari, Italy, assignors to The Boeing Company, Seattle, Wash.
Filed Jan. 22, 1973, Ser. No. 325,286
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—80

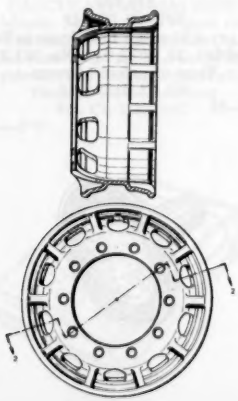


232,928
AUTOMOBILE
Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany
Filed Mar. 10, 1972, Ser. No. 233,844
Claims priority, application Germany Sept. 10, 1971
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92

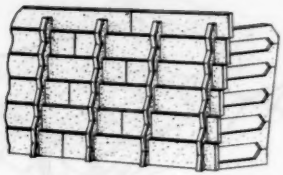
232,929
MOBILE HOME
Leo F. Dufrechou, 4033 Veterans Blvd., Metairie, La. 70005
Filed May 29, 1973, Ser. No. 364,549
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103



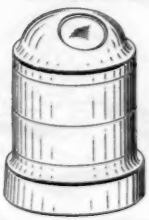
232,930
WHEEL
Michael Frederick Edwards, Wolverhampton, England, assignor to GKN Sankey Limited, Bilston, England
Filed Apr. 23, 1973, Ser. No. 353,239
Claims priority, application Great Britain Oct. 28, 1972
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209



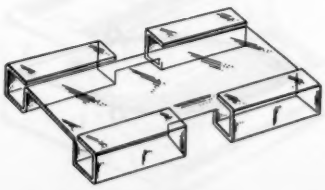
232,931
RETAINING WALL
Bertram H. Hirsch, 4949 Paradise Drive, Tiburon, Calif. 94920
Filed Oct. 20, 1971, Ser. No. 191,145
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 H



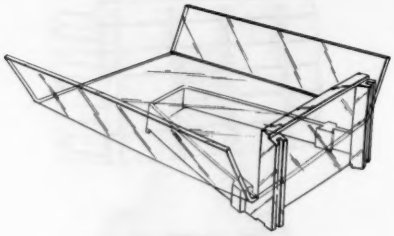
232,932
COMPARTMENTED RECEPTACLE DEVICE
Alwin John Stabel II, New Brighton, Minn., assignor to The Holes-Webway Co., St. Cloud, Minn.
Filed Jan. 8, 1973, Ser. No. 321,763
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



232,933
MAP HOLDER
Michel Pages, Dorchester Apts., 226 W. Rittenhouse Square, Philadelphia, Pa. 19103
Filed Jan. 26, 1972, Ser. No. 221,117
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—89



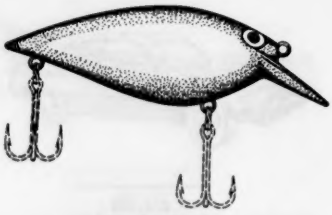
232,934
LETTER TRAY
Gordon Perry, Bayside, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 28, 1972, Ser. No. 295,980
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92



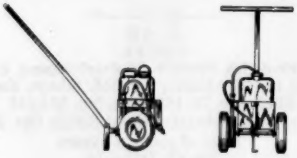
232,935
DESK PAD
Alwin John Stahel II, New Brighton, Minn., assignor to The Holes-Webway Co., St. Cloud, Minn.
Filed Jan. 10, 1973, Ser. No. 322,508
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—95

232,936
FISHING LURE
William D. Storm, Norman, Okla., assignor to Storm Plastics, Inc., Norman, Okla.
Filed Apr. 23, 1973, Ser. No. 353,434
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

232,937
FISHING LURE
William D. Storm, Norman, Okla., assignor to Storm Plastics, Inc., Norman, Okla.
Filed May 8, 1973, Ser. No. 358,292
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

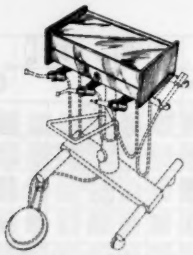


232,938
LIQUID SPRAYER
Mark A. Hettich, Dousman, and Charles P. Linskens, Delafield, Wis., assignors to Farm Better Service, Inc., Dousman, Wis.
Filed Nov. 20, 1972, Ser. No. 308,193
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18

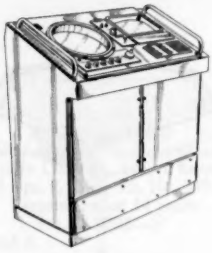


232,939
SPRAY HEAD
Leon M. Levy, Chicago, Ill., assignor to Selfix, Inc.
Filed Oct. 24, 1972, Ser. No. 301,213
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

232,940
DENTAL ACCESSORY TABLE TOP
Berl N. Atkinson, Arvada, Colo., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Jan. 2, 1973, Ser. No. 320,269
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B

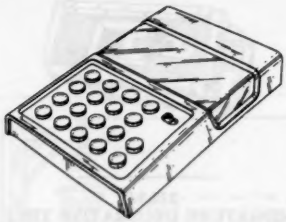


232,941
MARINE RADAR DATA PLOTTER
Myron F. Davis, Jr., Boca Raton, Fla., Walter Furlani, Poughkeepsie, N.Y., and Bernard N. Sassen, Pompano Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 24, 1973, Ser. No. 400,447
Term of patent 14 years
Int. Cl. D14—*02, 03*
U.S. Cl. D26—5 C

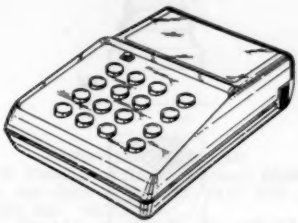


232,942
CALCULATING MACHINE
Hisashi Maeda, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co.
Filed June 5, 1973, Ser. No. 367,189
Claims priority, application Japan Feb. 1, 1973
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

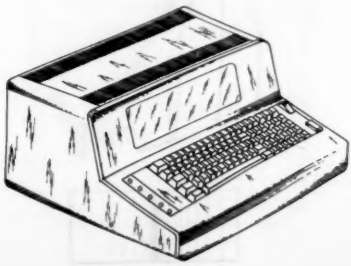
232,943
CALCULATING MACHINE
Hisashi Maeda, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co.
Filed June 5, 1973, Ser. No. 367,188
Claims priority, application Japan Dec. 6, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



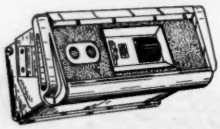
232,944
CALCULATING MACHINE
Hisashi Maeda, Nagaokakyo, and Hironori Yoshikawa, Osaka, Japan, assignors to Omron Tateisi Electronics Co., Ukyo-ku, Japan
Filed June 5, 1973, Ser. No. 367,350
Claims priority, application Japan Dec. 6, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



232,945
TELLER STATION
Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, and David L. Schaum, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 14, 1973, Ser. No. 370,178
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

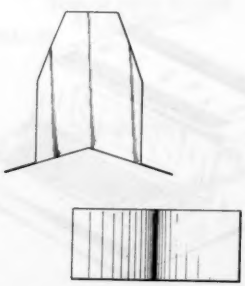


232,946
PASSENGER CONTROL BOX
Alan French, Warwick, R.I., and Joseph Machado, Attleboro, Mass., assignors to Avid Corporation, East Providence, R.I.
Filed May 14, 1973, Ser. No. 360,116
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

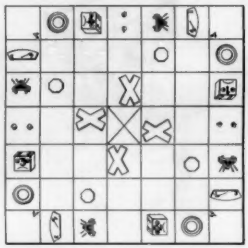


232,947
MINIATURE DECORATIVE TREE
William Christiansen, Jr., Palmetto, Fla., assignor to Snow Foam Products, Inc., El Monte, Calif.
Filed Sept. 21, 1972, Ser. No. 292,481
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—1 A

232,948
DOG EAR GROOMING HOLDER
Robert C. Morris P.O. Box 196, Bargersville, Ind. 46106
Filed Jan. 16, 1973, Ser. No. 324,152
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40

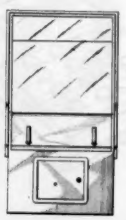


232,949
GAME BOARD
Paul K. Murphy, 9501 Corbin Ave., Northridge, Calif. 91324
Filed Apr. 21, 1971, Ser. No. 136,308
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

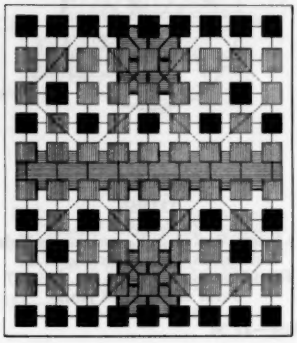


232,950
HEXAGONAL BILLIARD-TYPE TABLE
Frank James Casey, 11 Talofa Ave., East Ringwood, Victoria, 3135, Australia
Filed Sept. 5, 1972, Ser. No. 286,254
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—3

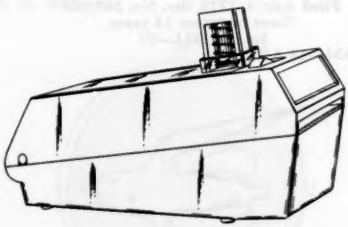
232,951
MANUALLY CONTROLLED REFLECTIVE PIN-BALL GAME CABINET
Ronald D. Halliburton, Miami, Fla., assignor to Allied Leisure Industries, Inc., Hialeah, Fla.
Filed Feb. 17, 1972, Ser. No. 227,341
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 JJ



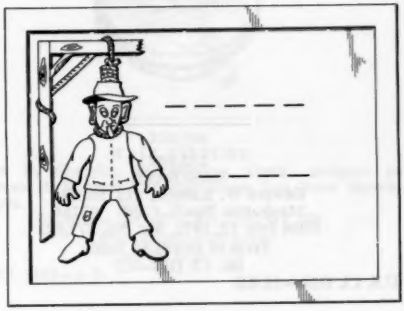
232,952
**MANDARIN CHESSBOARD**
Norman Chan, Elmhurst, N.Y., assignor to A.C. International Corp., New York, N.Y.
Filed June 16, 1972, Ser. No. 263,526
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



232,953
**CARD DEALER**
Shigeo Oguchi, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Apr. 9, 1973, Ser. No. 349,549
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—13 A

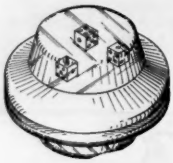


232,954
**GAMEBOARD**
Edward P. Zimmer, 27 Sterling Ave., Buffalo, N.Y. 14216
Filed Apr. 18, 1973, Ser. No. 352,188
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



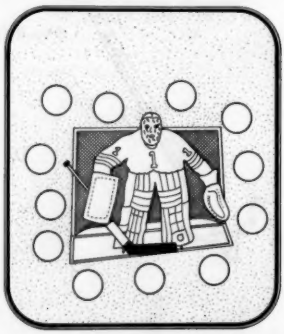
232,955
**TOY HOOP ROLLER**
Gilbert W. Fiene, Jr., 7510 N. Highland, Gladstone, Mo. 64118, and Gary L. Protenic, 6917 NW. Coronado, Parkville, Mo. 64152
Filed May 7, 1973, Ser. No. 358,087
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 HP

232,956
COMBINED RETURN TOP AND GAME DEVICE
Willy Chelman, Brussels, Belgium, assignor to I.D. Innovations & Diffusions S.A., Brussels, Belgium
Filed June 30, 1972, Ser. No. 267,742
Claims priority, application Switzerland Mar. 9, 1972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AH

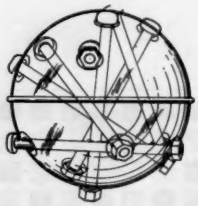


232,957
BASEBALL
Edward W. Kahelin, 812 5th St., Manhattan Beach, Calif. 90266
Filed July 12, 1972, Ser. No. 271,022
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15 EE

232,958
HOCKEY GAME DART BOARD
Marcel Siers, 8426 N. Ozark Ave., Niles, Ill. 60648
Filed May 16, 1973, Ser. No. 360,807
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



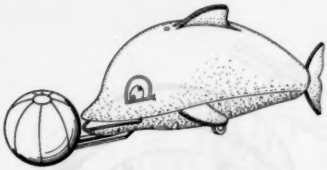
232,959
PUZZLE DEVICE
Gini Scott, 460 35th Ave., San Francisco, Calif. 94121
Filed Dec. 18, 1972, Ser. No. 316,383
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



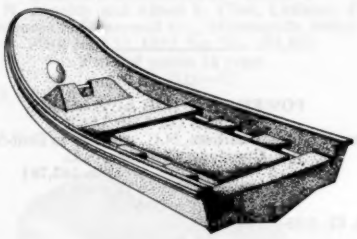
232,960
SPARKLER TOY
Perry Feuer, Roslyn, N.Y., assignor to Yuletide Enterprises, Inc., Hicksville, N.Y.
Filed Mar. 30, 1973, Ser. No. 346,287
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M

232,961
INFLATABLE KITE
Louis Lawrence Laske, Grays Lake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.
Filed Apr. 4, 1973, Ser. No. 347,860
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF

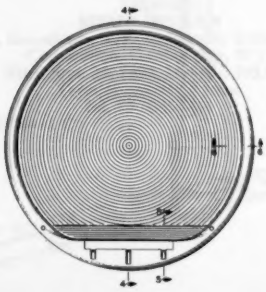
232,962
TOY DOLPHIN
Haruo Suzuki, Chiba, Japan, assignor to Toytown Corp., Tokyo, Japan
Filed May 24, 1973, Ser. No. 363,661
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



232,963
WATER SLED
Richard W. Turner, 1786 Tubbs St., Thousand Oaks, Calif. 91360
Filed July 14, 1972, Ser. No. 271,735
Term of patent 14 years
Int. Cl. D21—*03;* D12—*13*
U.S. Cl. D34—42

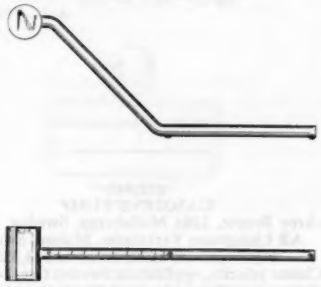


232,964
WATER SLED
Nevitt S. Beck, 260 Bonnett St. SW., North Canton, Ohio 44720
Filed Dec. 14, 1972, Ser. No. 315,137
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D34—42

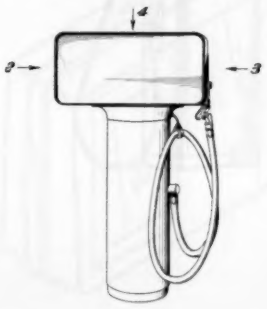


232,965
FINGER RING
Walter E. Atwell, 4625 Beaubien, Apt. 68, Lisle, Ill. 60532
Filed Aug. 19, 1970, Ser. No. 24,584
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

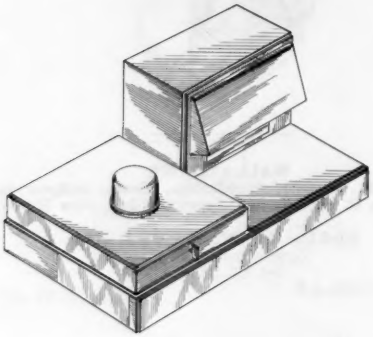
232,966
WALL FIXTURE
Sylvan R. Shemitz, Woodbridge, Conn., assignor to Sylvan R. Shemitz and Associates, Inc., New Haven, Conn.
Filed Dec. 14, 1972, Ser. No. 315,133
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B



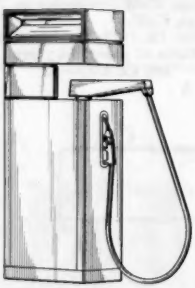
232,967
GASOLINE DISPENSING PUMP
Roger Kennedy, Studio City, and Peter B. Rothschild, Santa Fe Springs, Calif., assignors to Pan-Nova, Inc., Santa Fe Springs, Calif.
Filed Jan. 10, 1972, Ser. No. 216,886
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D52—2 A



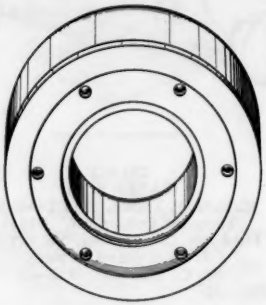
232,968
**DIFFERENTIAL SCANNING CALORIMETER OR SIMILAR INSTRUMENT**
Allan P. Gray, Bridgeport, and Thomas M. Murray, Trumbull, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Jan. 12, 1972, Ser. No. 217,440
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



232,969
**GASOLINE PUMP**
Carl-Arne Breger, Lilla Molleberga, Sweden, assignor to AB Ljungmans Verkstader, Malmo, Sweden
Filed Apr. 14, 1972, Ser. No. 244,325
Claims priority, application Sweden Oct. 14, 1971
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D52—2 A

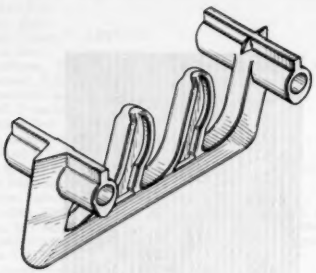


232,970
**MATERIAL FEED RING FOR GYRATORY CRUSHERS**
Sven-Erik Dyrup, Oxie, Sweden, assignor to Trelleborgs Gummifabriks AB
Filed May 23, 1972, Ser. No. 256,216
Claims priority, application Sweden Nov. 23, 1971
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 H

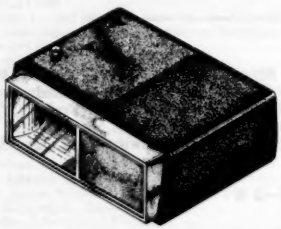


232,971
**POWER UNIT FOR ACTUATING VALVES OR THE LIKE**
John J. Dixon, Charlotte, N.C., assignor to Duff-Norton Company, Charlotte, N.C.
Filed June 14, 1972, Ser. No. 262,781
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 G

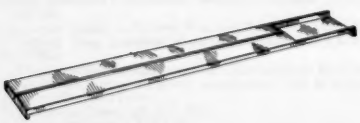
232,972
CONVEYOR RECEPTACLE FOR CARRYING SOILED WARE IN A DISHWASHING MACHINE
Erik O. Vilen, La Grange Park, Ill., assignor to G. S. Blakeslee and Company, Cicero, Ill.
Filed Dec. 20, 1972, Ser. No. 316,698
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 C



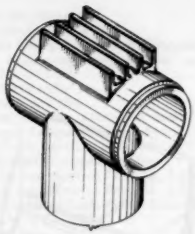
232,973
CAMERA FLASH ATTACHMENT
David N. Arnoldy and Albert L. Cline, Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.
Filed June 28, 1973, Ser. No. 374,564
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



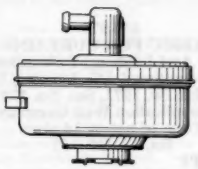
232,974
MEMO HOLDER
Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 28, 1972, Ser. No. 295,982
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C



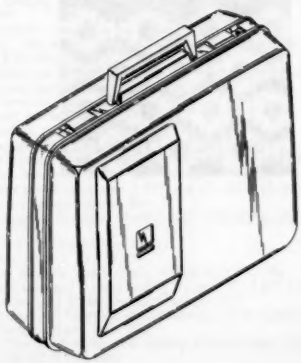
232,975
FINNED MOTORCYCLE INTAKE MANIFOLD
Martin E. Burke, 511 E. James St., Kent, Wash. 98031, and Leslie L. Van Kirk, 606 L St. SE., Auburn, Wash. 98002
Filed Aug. 7, 1972, Ser. No. 278,607
Term of patent 14 years
Int. Cl. D15—*99*; D12—*11*
U.S. Cl. D77—1 A



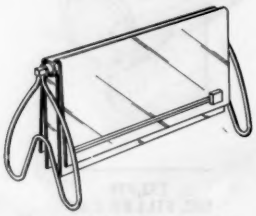
232,976
OIL FILLER CAP
Lewis L. Ruter, 218 26th Ave. N., Minneapolis, Minn. 55411
Filed Jan. 18, 1973, Ser. No. 324,777
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A



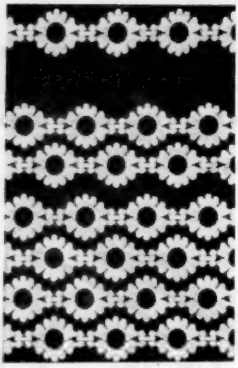
232,977
CARRYING CASE FOR A MOTION PICTURE PROJECTOR OR SIMILAR ARTICLE
Dianne B. Ainslie, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 8, 1972, Ser. No. 287,306
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—5 E



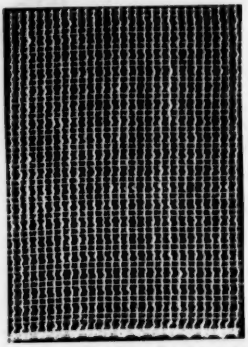
232,978
**PURSE ORGANIZER OR THE LIKE**
Edna H. Edwards, 1100 Chantilly Road, Los Angeles, Calif. 90024
Filed Oct. 6, 1972, Ser. No. 295,590
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—2 R



232,979
**FABRIC FOR CURTAINS**
Peter Schroeder, Arni-Islisberg, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Mar. 30, 1971, Ser. No. 129,650
Claims priority, application West Germany Oct. 6, 1970
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 PP



232,980
**CURTAIN FABRIC**
Peter E. Schroeder, Arni, Switzerland, assignor to Gardisette International AG, Zurich, Switzerland
Filed Apr. 10, 1972, Ser. No. 242,904
Claims priority, application Germany Oct. 9, 1971
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 PP



232,981
**DRY SHAVER OR SIMILAR ARTICLE**
Leslie Leonard Lane, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1972, Ser. No. 306,343
Claims priority, application Switzerland May 15, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

# LIST OF PATENTEES

## TO WHOM

## PATENTS WERE ISSUED ON THE 24TH DAY OF SEPTEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

**A. P. V. Company Limited, The:** *See—*
Shore, David Teignmouth; and Starkie, Granville Lewis, 3,837,271.

**A-T-O Inc.:** *See—*
Carter, Sidney T., 3,837,974.

**AB Bofors:** *See—*
Gustafsson, Melker Emanuel; Stradalen, Yngve Bertil; and Zander, Erik Gustav Ake, 3,837,278.

**AB Emmaboda Glasverk:** *See—*
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**AB Eric Joos:** *See—*
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**AB Hagglund & Soner:** *See—*
Agren, Sven Birger; and Rowa, Elof Hjalmar, 3,837,260.

**AB Linde International:** *See—*
Nilsson, Rune, 3,837,446.

**Abbe, Lucien;** Eschbach, Jean Michel; Letang, Roland; and Sachs, Charles, to Commissariat A L' Energie Atomique. Method of semi-automatic encapsulation and a semi-automatic encapsulating apparatus. 3,837,065, Cl. 29-429.000.

**Abbott Laboratories:** *See—*
Blank, Artur, 3,838,136.

**Abbott, Paul, Co., Inc.:** *See—*
Green, Edgar E., 3,837,408.

**Abbott, Thomas Irving,** to Eastman Kodak Company. Photographic materials curve shape stabilized with carboxy substituted 4-thiouracils. 3,837,857, Cl. 96-74.000.

**Abe, Toshihiro:** *See—*
Masuda, Maosuke; Abe, Toshihiro; and Kato, Yoshihiko, 3,837,713.

**ACF Industries, Incorporated:** *See—*
Fossett, Wallace L., 3,837,294.
Smith, Russell F., 3,837,497.

**Ackard, David A.;** and Stark, Donald E., to Westinghouse Air Brake Company. Failure detection for highway grade crossing signal systems. 3,838,271, Cl. 246-125.000.

**Acker, Jesse L.;** and Meserol, Peter M., to Akro-Medic Engineering Corporation. Apparatus for evaluation of biological fluid. 3,837,745, Cl. 356-201.000.

**Acker, Jesse L.;** and Meserol, Peter M., to Akro-Medic Engineering Corporation. Apparatus for evalutaion of biological fluid. 3,837,746, Cl. 356-201.000.

**Acorn Building Components, Inc.:** *See—*
Di Fazio, Joseph, 3,837,134.

**Adamek, Victor.** Motorbike loader-carrier. 3,837,513, Cl. 214-450.000.

**Adams, Phillip:** *See—*
Merianos, John J.; and Adams, Phillip, 3,838,197.

**Adams, Richard C.:** *See—*
Monahan, Thomas J.; and Adams, Richard C., 3,837,552.

**Adickes, Edward J.;** deceased (by Adickes, Elizabeth A., administratrix). Locks, for fliding members. 3,837,693. Cl. 292-207.000.

**Adickes, Elizabeth A.:** *See—*
Adickes, Edward J., 3,837,693.

**Adlaf, Paul C.,** to Kendall Company, The. Foley catheter containing cholesterol. 3,837,346, Cl. 128-349.00r.

**Adolph E. Goldfarb:** *See—*
Goldfarb, Adolph E.; Strader, George C.; and Strader, Judy D., 3,837,114.

**Aerojet-General Corporation:** *See—*
Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Hamel, Edward E., 3,838,101.

**Aeroquip Corporation:** *See—*
Evans, Bryce B.; and Elsner, Edwin C., 3,837,631.

**Agence Nationale de Valorisation de la Recherche:** *See—*
Royer, Rene R.; Demerseman, Pierre G.; Rene, Loic J.; and Cavier, Raymond E., 3,838,173.

**Agren, Sven Birger;** and Rowa, Elof Hjalmar, to AB Hagglund & Soner. Pivotable turret with a firing weapon arranged eccentrically. 3,837,260, Cl. 89-37.00h.

**Ahn, Junghi; Schwartz, Bernard;** and Wilcox, David L., to International Business Machines Corporation. Multilayer circuits. 3,838,204, Cl. 174-68.500.

**Ahrens, Lislie Jasper,** to Process Wax and Resin Products (Proprietary) Limited. Wax treatment of particulate material. 3,838,186, Cl. 264-12.000.

**Aillet, Claude,** to Societe Lannionnaise d'Electronique Sle-Citerel. Apparatus for measuring the group propagation time in a quadripole. 3,838,336, Cl. 324-57.00r.

**Air Products and Chemicals, Inc.:** *See—*
Langsam, Michael, 3,838,138.
Molina, Orlando G., 3,838,160.

**Airheart Products, Inc.:** *See—*
Martins, Samuel J., 3,837,437.

**Aisenberg, Sol;** and Chang, Kuo Wei, to Whittaker Corporation. Blood glucose level monitoring-alarm system and method therefor. 3,837,339, Cl. 128-213.000.

**Aisin Seiki Kabushiki Kaisha:** *See—*
Kagata, Tooru, 3,837,236.

**Akamatsu, Kiyoshi; Maruta, Masayasu;** and Yonekura, Yasushi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the preparation of printing plate of photosensitive resin. 3,837,887, Cl. 117-34.000.

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Acker, Jesse L.; and Meserol, Peter M., 3,837,745.
Acker, Jesse L.; and Meserol, Peter M., 3,837,746.

**Akron Standard, division of Eagle-Picher Industries, Inc.:** *See—*
Csatlos, Geza M., 3,837,689.

**Aktiebolaget Astra:** *See—*
Berntsson, Peder Bernhard; Gaarder, Jan Ornulf; and Lamm, Bo Robert, 3,838,027.

**Aktiebolaget Vibro-Verken:** *See—*
Holmlund, Henrik, 3,837,231.

**Aktieselskabet Laur. Knudsen Elektricitets Selskab:** *See—*
Norholm, Olav, 3,838,376.

**Alagy, Jacob; Busson Christian;** and Cha, Bernard, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for manufacturing alcohols by oxidation of saturated hydrocarbons containing from 5 to 8 carbon atoms per molecule. 3,838,179, Cl. 260586.0ab.

**Alarm Equipment Supplies Limited:** *See—*
McSorley, David J.; and De Croos, Jaye, 3,838,419.

**Albers, Edwin W.:** *See—*
Vaughan, David E. W.; Maher, Philip K.; and Albers, Edwin W., 3,838,037.

**Albert, William C.:** *See—*
Stiles, John C.; and Albert, William C., 3,837,229.

**Albright & Wilson Limited:** *See—*
Edwards, Alfred Gerald, 3,838,103.

**Aleshire, Rex A.:** *See—*
Patel, Ramesh U.; and Aleshire, Rex A., 3,837,462.

**Alexeeva, Ljudmila Andreevna:** *See—*
Dakhov, Mark Illarionovich; Nesterov, Pavel Petrovich; Semkin, Alexei Trofimovich; Alexeeva, Ljudmila Andreevna; Sakhnovsky, Arkady Zinovievich; Skrypnik, ˙ an Timofeevich; Klimovsky, Lev Lvovich; and Miroshnichenko, Viktor Alexandrovich, 3,837,152.

**Alfa-Laval AB:** *See—*
Nilson, Carl-Goran; and Olsson, Sven Olov, 3,837,567.

**Alinari, Carlo.** Depth gauges. 3,837,225, Cl. 73-300.000.

**Allaire, Eugene Joseph;** and Paradis, Eugene. Mop frame. 3,837,031, Cl. 15-150.000.

**Allen, Joseph C.; Tate, Jack F.;** and Park, Jack H., to Texaco Inc. Combined multiple solvent miscible flooding water injected technique for use in petroleum formations. 3,837,399, Cl. 166-266.000.

**Allen, Joseph C.;** and Shum, Yick-Mow. Hot fluid injection into hydrocarbon reservoirs. 3,837,401, Cl. 166-303.000.

**Allen, Nigel Stafford David;** and Kammerling, Walter, to Federal-Mogul Westwind Air Bearings Limited. Air, gas or fluid bearings. 3,837,716, Cl. 308-9.000.

**Aller, T. Dwight,** to Hydrometals, Inc. Small pump. 3,837,767, Cl. 417-424.000.

**Alley, Lewis F.:** *See—*
Long, Marshall; Alley, Lewis F.; and Reynolds, William A., 3,837,249.

**Alley, Raymond L.,** to American Warming & Ventilating Inc., The. Protective damper for gas exhaust duct. 3,837,268, Cl. 98-110.000.

**Allied Chemical Corporation:** *See—*
Dutoit, Michel, 3,838,365.
Hamilton, Brian K., 3,837,671.
Sopchak, Peter; and Guptill, Joel P., 3,838,189.
Sutherland, John A.; and Sweny, John W., 3,837,143.

**Allinquant, Fernand Michel;** and Allinquant, Jacques Gabriel. Oleopneumatic shock absorbers. 3,837,444, Cl. 188-315.000.

**Allinquant, Jacques Gabriel:** *See—*
Allinquant, Fernand Michel; and Allinquant, Jacques Gabriel, 3,837,444.

**Allis-Chalmers Corporation:** *See—*
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Hammarlund, Gudmar; and Johansson, Arne, 3,838,319.
Moberg, Lennart, 3,837,072.

**Alsberg, Dietrich Anselm;** and Alsberg, Glenna Rose. Drainage system. 3,837,168, Cl. 61-10.000.

Alsberg, Glenna Rose: *See—*
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Alside, Inc.: *See—*
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Altermatt, Ruedi. Disazo compound of low water solubility. 3,838,145, Cl. 260-184.000.

Altgauzen, Andrei Pavlovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Altman, Gerald. Low profile episcopic projector and opaque materials therefor. 3,837,739, Cl. 353-66.000.

Aluminum Company of America: *See—*
Jacobs, Stanley C., 3,838,384.

Amana Refrigeration, Inc.: *See—*
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Amemiya, Kinya, to Konishiroku Photo Industry Co., Ltd. Duplication magnification variable device for use in a duplicator. 3,837,743, Cl. 355-60.000.

Amerco, Inc.: *See—*
Long, Larry K.; Knight, Thomas C.; and Jackson, William F., 3,837,635.

American Can Company: *See—*
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American Home Products Corporation: *See—*
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American Optical Company, mesne: *See—*
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American Warming & Ventilating Inc., The: *See—*
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Amin, Rajnikant Babubhai, to Du Pont de Nemours, E. I., and Company. High adhesion silver-based metallizations. 3,838,071, Cl. 252-514.000.

Amir, Jacob; and Cherry, Joe H., to Purdue Research Foundation. Method of increasing sugar accumulation in plant storage organs. 3,837,837, Cl. 71-113.000.

Amos, Lynn G.; and Howard, Charles A., to Corning Glass Works. Oil dispenser for microscope objective. 3,837,731, Cl. 350-179.000.

AMP Incorporated: *See—*
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Anderson, A. D.; Lauridsen, Walter E.; and Overstreet, Charles L., to Iowa Beef Processors, Inc., mesne. Method and apparatus for breaking animal carcasses and handling meat products. 3,837,699, Cl. 294-118.000.

Anderson, Greenwood, & Co.: *See—*
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Weise, Irvin B.; and Purfurst, Ernest H., 3,837,765.

Anderson, Harold E., to McCulloch, Corporation. Eddy current dynamometer speed control circuit and method. 3,838,323, Cl. 318-302.000.

Anderson, Harry B., to United Aircraft Corporation. Beam current regulator for electron beam machines. 3,838,313, Cl. 315-291.000.

Anderson, Theodore H.; O'Konski, George J.; and Zell, Michael N., to International Business Machines Corporation. Sheet pick-up and feeding device. 3,837,638, Cl. 271-95.000.

Andersson, Ingvar, to Bevaknings AB Securitas. Ionization smoke detector. 3,838,283, Cl. 250-381.000.

Andres, Karlheinz: *See—*
Dietrich, Werner; Reiff, Helmut; Andres, Karlheinz; Niggemann, Johannes; and Roos, Ernst, 3,838,075.

Andress, Harry J., Jr., to Mobil Oil Company. Lubricant having therein a methylene oxyaromatic compound. 3,838,051, Cl. 252-52.00r.

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Andrews, Walter G.: *See—*
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Angelos, Arthur C. Apparatus for detecting spin of golf ball in indoor golf playing system. 3,837,655, Cl. 273-185.00r.

Angelucci, Louis J., Jr., to Philco-Ford Corporation. Cathode ray tube manufacture. 3,837,885, Cl. 117-33.5cm.

Angliker, Hans-Joerg: *See—*
Litzler, Alfred; Liechti, Hans Wilhelm; Guye-Vuilleme, Jean-Frederic; Koller, Eugen Johann; Milicevic, Branimir; and Angliker, Hans-Joerg, 3,837,802.

Anglin, Noah L.; and Machamer, Roy J., to Office Communications, Inc. Single element printer having a closed loop digital electronic control. 3,837,457, Cl. 197-18.000.

Ansell, James Joseph; and Payne, Kenneth Gordon, to Rolls Royce (Composite Materials) Limited. Method of assembling honeycomb structures. 3,837,962, Cl. 156-293.000.

Anselment, Wolfgang; and Holl, Walter, to Bosch, Robert, GmbH. Electrical insulating member such as a distributor cap. 3,838,207, Cl. 174-138.00f.

..IVAR-Agence Nationale de Valorisation de la Recherche: *See—*
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Aoki, Takeo: *See—*
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Appiah, Michael: *See—*
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Appleton Machine Company: *See—*
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Appling, Bobby C. Frequency simulator for EW training device. 3,838,201, Cl. 35-10.400.

Aqua-Chem, Inc.: *See—*
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Araki, Taiji: *See—*
Tanoue, Toyosuke; Araki, Taiji; and Aoki, Takeo, 3,837,842.

Arbiter, William, to United Nuclear Corporation. Method and apparatus for in situ calibration of electrochemical sensors. 3,838,021, Cl. 204-1.00t.

Ardco, Inc.: *See—*
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Argelich, Termes y C°. Sociedad Anonima: *See—*
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Armstrong, John Keith: *See—*
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Arnett, Patrick C.; and Chang, Joseph J., to International Business Machines Corporation. Non-volatile diode cross point memory array. 3,838,405, Cl. 340-173.00r.

Aronberg, Lester, to Lake Chemical Company. Fluxes for use in bonding plates of storage batteries to connecting straps. 3,837,932, Cl. 148-23.000.

Arouete, Jean. Electric lock for emergency exit door. 3,837,192, Cl. 70-92.000.

Arrigoni, Virgilio; Gaetani, Bruno; Marchesi, Gianfranco; and Zanoni, Gianfranco, to Snam Progetti S.p.A. Automatic device for controlling catalytic mufflers. 3,837,165, Cl. 60-277.000.

Arrowhead Engineering Corporation: *See—*
Wolbert, Fred A., 3,837,200.

Arroyo, Luis Saenz, to Product Adex, S.A. Shuttoff valve device. 3,837,381, Cl. 141-350.000.

Artemiev, Vladimir Dmitrievich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Asahi Glass Company, Ltd.: *See—*
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Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
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Asakura, Hiroshi; Sakai, Keisuke; Koyama, Masaru; and Mizuguchi, Hironori, to Toyo Kagaku Kabushiki Kaisha; a/k/a Toyo Chemical

Co., Ltd. Apparatus for continuously producing corrugated plastic board. 3,837,973, Cl. 156-470.000.

Asnis, Arkady Efimovich; Gretsky, Yury Yakovelevich; and Metlitsky, Vladislav Alexandrovich. Flux-cored electrode. 3,838,246, Cl. 219-146.000.

Asp, Gerald H. Sale support for use with ski bindings. 3,837,664, Cl. 280-11.35c.

Astra Lakemedel Aktiebolag: *See—*
Bamberg, Peter; and Sjoberg, Enhorna Berndt Olof Harald, 3,838,008.

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Atkinson, Peter: *See—*
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Atkinson, Wallace E., to Long Manufacturing Co., Inc. Padlock construction. 3,837,189, Cl. 70-21.000.

Atomic Energy of Canada Limited: *See—*
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Atsumi, Minoru: *See—*
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Austin, Lowell W.; Beale, Louis C., Jr.; and Smith, Edwin J., to National Steel Corporation. Method of improving the corrosion resistance of substrates. 3,838,024, Cl. 204-41.000.

Austral-Erwin Engineering Co.: *See—*
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Automated Building Components, Inc.: *See—*
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Automatik Apparate-Machinenbau H. Hench GmbH: *See—*
Perschbacher, Otto; Hunke, Friedrich; and Glaab, Berthold, 3,837,586.

Automobiles Peugeot: *See—*
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Autoquip Corporation: *See—*
Clarke, Jesse E., 3,837,434.

Avco Corporation: *See—*
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Avdel Limited: *See—*
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Avitzur, Betzalel: *See—*
Mori, Masahiro; Hahn, Walter C.; and Avitzur, Betzalel, 3,837,066.

Avon Products, Inc.: *See—*
Jedzinak, John E.; and Zukoski, Ronald, 3,837,349.

Ayers, Grover W.; and Zinnbauer, Gerald B., to Lilly, Eli, and Company. Safety fastener for container. 3,837,692, Cl. 292-152.000.

Baak, Tryggve, to Cyprus Mines Corporation. Beneficiation of New York State talc. 3,837,582, Cl. 241-4.000.

Baardson, Andrew, to Mill Conversion Contractors, Inc. Wood and gas fuel burner. 3,837,303, Cl. 110-8.00a.

Babcock & Wilcox Company, The: *See—*
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Bacher, Rudolph J.; and Nakayama, Takashi, to Du Pont de Nemours, E. I., and Company. Celsian containing dielectric crossover compositions. 3,837,869, Cl. 106-53.000.

Bachmann, Wilhelm Georg; Scheffel, Ehrenfried G.; Weissenfels, Klaus J.; and Ziehe, Hermann. Multi-station engine control system. 3,838,410, Cl. 340-286.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Fischer, Martin; Wiersdorff, Walter-Wielant; Nuerrenbach, Axel; Horn, Dieter; and Feichtmayr, Franz, 3,838,029.
Martin, Wolfgang; Schwoerer, Ulrich; Bauer, Wolfgang; and Staufer, Dieter, 3,837,052.

Baermann, Max. Baker device for vehicles. 3,837,442, Cl. 188-159.000.

Baglai, Vitaly Mikhailovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Bagley, Rodney D., to Corning Glass Works. Extrusion die. 3,837,783, Cl. 425-464.000.

Bahler, Andre; Gschwend, Norbert; and Scheier, Heinrich, to Sulzer Brothers Ltd. Endo-prosthesis for a wrist joint. 3,837,008, Cl. 3-1.000.

Bajek, Walter A.; and McLaughlin, James H., to Universal Oil Products Company. Combination column reboiler heat input, octane, overhead and bottoms control apparatus. 3,838,014, Cl. 196-132.000.

Baker Hydro, Inc.: *See—*
Whitaker, Brackston T., 3,837,015.

Baldwin, J. A., Manufacturing Company: *See—*
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Baldwin, Jesse A., to Baldwin, J. A., Manufacturing Company. Liquid filters. 3,837,495, Cl. 210-314.000.

Baldwin, Richard F., to Clorox Company, The. Aerosol dispenser with actuator latching means. 3,837,537, Cl. 222-153.000.

Ballinger, Forrest H.; Farnham, Wilfred L., Jr.; and Heggestad, Robert E., to Harmon Industries, Inc. Digital motion detector. 3,838,270, Cl. 246-130.000.

Balzers patent-und Beteiligungs-Aktiengesellschaft: *See—*
Rheinberger, Peter, 3,837,884.

Bamberg, Peter; and Sjoberg, Enhorna Berndt Olof Harald, to Astra Lakemedel Aktiebolag. Stereoselective preparation of L-dopa and L-M-tyrosine and novel compounds. 3,838,008, Cl. 195-29.000.

Band-It Company: *See—*
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Banks, William: *See—*
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Baranski, Edward J.: *See—*
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Barbeau, Raymond A.; McGinnis, Bernard W.; and Weidenhammer, James A., to International Business Machines Corporation. Aerodynamic partitioning mechanism for random access memory with flexible rotating discs. 3,838,461, Cl. 360-99.000.

Barbeau, Raymond A.; McGinnis, Bernard W.; Orlando, Anthony W.; and Weidenhammer, James A., to International Business Machines Corporation. Partitionable disc memory with flexible discs and conformally suspended head. 3,838,462, Cl. 360-99.000.

Barber, Walter G.: *See—*
Loxley, Ted A.; Barber, Walter G.; Combs, Walter W.; and Webb, John M., 3,837,825.

Barber-Greene Company: *See—*
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Bardo, Eugene E.; and Schroeder, Franklin T., to Burroughs Corporation. Pulse shaping circuit. 3,838,297, Cl. 307-268.000.

Barenyi, Bela; and Renner, Hermann, to Daimler-Benz Aktiengesellschaft. Protection device for vehicle passengers. 3,837,668, Cl. 280-150.00b.

Barker, Robert S., to Halcon International, Inc. Catalyst and use thereof. 3,838,067, Cl. 252-432.000.

Barkley, George G.; Sorice, Edward L.; and Niebauer, Kenneth L., to Kennametal Inc. Tool holder. 3,837,058, Cl. 29-96.000.

Barnard, Cecil Percy, to International Business Machines Corporation. Head carriage assembly for magnetic disk storage apparatus. 3,838,455, Cl. 360-78.000.

Barnes, Andrew Nicholas Morrison; Chen, Wai Ming; Rickards, Tudor; Rosser, David Arthur; and Thurairajan, Ponnuswamy, to Lever Brothers Company. Toilet bars. 3,838,057, Cl. 252-117.000.

Barnes, Gene A., to Eaton Corporation. Fluid flow control. 3,837,362, Cl. 138-45.000.

Barnes, Reno R. Boat carrier for vehicles. 3,837,514, Cl. 214-450.000.

Barnes, Roger L.; and Hill, David H., to Tri-Star Corporation. Trailer hitch for coupling with pick-up truck. 3,837,675, Cl. 280-423.00r.

Baron, Andre H.: *See—*
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Baron, Wilfred R., to TRW Inc. Solar array. 3,837,924, Cl. 136-89.000.

Barrett, David M.; and Chrapkowski, Ralph K., to General Electric Company. Fluoroscopic localization system for angular radiography. 3,838,287, Cl. 250-445.000.

Barron, Abraham, 1/2 to Hochhauser, Abe. Collapsible desk and chair. 3,837,719, Cl. 312-195.000.

Bartell, William H., to Vicon Instrument Company, The. Apparatus for processing electronic components. 3,837,369, Cl. 140-1.000.

Barth, Harald. Flexible coupling. 3,837,179, Cl. 64-14.000.

Bartholomew, Earl, to Ethyl Corporation. Induction system. 3,837,628, Cl. 261-39.00b.

Bartolini, Michael G.; and Horner, Edmund E., to MacDermid Incorporated. Chelating/complexing dip in bright plating of brass. 3,838,022, Cl. 204-32.00r.

Battelle Development Corporation: *See—*
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Bauer, Fritz. Seating furniture. 3,837,704, Cl. 297-345.000.

Bauer, George T., to Xerox Corporation. Partially transparent plates for increased image contrast. 3,837,732, Cl. 350-235.000.

Bauer, Wolfgang: *See—*
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Bauerle, Gerhard; and Hubner, Oswald, to Bunker Ramo Corporation. Furcate contact. 3,838,388, Cl. 339-258.00r.

Baughman, Karl T.; and Shannon, Richard L., to Sears, Roebuck and Co. Typewriter with sliding tambour cover. 3,837,464, Cl. 197-186.00r.

Baxter, George I.; Rolla, Clarence P.; and Holland, Charles L., to General Dynamics Corporation. Refrigerated hopper equipment for automatic riveting machines. 3,837,176, Cl. 62-225.000.

Bayer Aktiengesellschaft: *See—*
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Schwerdtel, Wulf; Kronig, Walter; Scharfe, Gerhard; and Swodenk, Wolfgang, 3,838,019.

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Beale, Louis C., Jr.: *See*—
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Bean, Kenneth E.; Gleim, Paul S.; and Runyan, Walter R., to Texas Instruments Incorporated. Semiconductor device isolation using silicon carbide. 3,838,441, Cl. 357-49.000.

Beardsley, Harold H., to Band-It Company. Tool for tensioning a circular band. 3,837,373, Cl. 140-93.400.

Beaucamp, Klaus: *See*—
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Beaupre, Robert E.: *See*—
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Beaver, Harold R.,: *See*—
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Beck, Carl A., to Certain-Teed Products Corporation, mesne. Apparatus for wrapping molded pipe insulation. 3,837,971, Cl. 156-447.000.

Becker, Horst; and Kohlert, Gerhard, to Vereinigte Deutsche Metallwerke AG. Austenitic steel alloy adapted to be welded without cracking. 3,837,846, Cl. 75-124.000.

Becker, Karl Heinz: *See*—
Pohlke, Rolf; Jonas, Rochus; Mehrhof, Werner; Schlier, Hans-Jochen; Becker, Karl Heinz; Nowak, Herbert; and Simane, Zdenek, 3,838,147.

Becker, Stanley A.; Fizett, William B.; and Wood, Richard T., to Biomatics Instrument Corporation. Method and apparatus for staining slides. 3,837,795, Cl. 8-3.000.

Beckers, Norman L., to Diamond Shamrock Corporation. Stabilization of perchloroethylene. 3,838,058, Cl. 252-171.000.

Beecham Group Limited: *See*—
Lhoas, Pol Joseph Ghislain, 3,838,003.

Beers, Melvin D., to General Electric Company. Process for treating silica fillers. 3,837,878, Cl. 106-308.00q.

Behringer, Cecil; and Kamin, George J., to GTE Sylvania Incorporated. Method of preventing coating diffusion flow. 3,837,880, Cl. 117-5.500.

Beisch, Hanspeter E.: *See*—
Consoli, Frank J.; Rebechini, Peter G.; and Beisch, Hanspeter E., 3,837,409.

Bell, John Howard, to Fisons Limited. Medicament inhalation device with audible indicating means. 3,837,341, Cl. 128-266.000.

Bell, Malcolm R.: *See*—
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Bell-Northern Research Ltd.: *See*—
Morrell, Ronald Joseph; Gumb, Bev William; Laing, Graham Sterling; and Cogan, Frederick Thomas, 3,838,229.

Bellamy, Winthrop D.; and Chakrabarty, Ananda M., to General Electric Company. Conditioning raw waste input for digestion by thermophilic aerobic microorganisms. 3,838,198, Cl. 426-53.000.

Beloit Corporation: *See*—
Skinner, Eugene S.; Crist, Elmer E.; and Phelps, Louis D., 3,837,658.

Bendix Corporation, The: *See*—
Higgins, Paul T., 3,837,198.

Benjamin, John Stanwood: *See*—
Cairns, Robert Lacock; and Benjamin, John Stanwood, 3,837,930.

Bennett, James G.; and Cooper, Gleen D., to General Electric Company. Removal of metallic catalyst residue from polyphenylene ethers. 3,838,102, Cl. 260-47.0et.

Benoit, Robert L.; Peters, Winslow W.; and Morgan, Joseph, to Grumman Aerospace Corporation. Multi-piece rod for control and structural members. 3,837,755, Cl. 403-274.000.

Benson, Robert W.; and Reed, Robert G., to Beaver, Harold R.,. Soil impedance log. 3,838,428, Cl. 346-33.00r.

Bergeron, John A., to General Electric Company. Combined sampling and bacteriological culturing device. 3,838,013, Cl. 195-139.000.

Berglund, Carl Neil; Nicollian, Edward Haig; Tompsett, Michael Francis; and Waggener, Herbert Atkin, to Bell Telephone Laboratories, Incorporated. Multiple-level metallization for integrated circuits. 3,837,907, Cl. 117-212.000.

Bergmeyer, Hans Ulrich: *See*—
Hagen, Alexander; Bergmeyer, Hans Ulrich; Gruber, Wolfgang; Beaucamp, Klaus; and Jaworek, Dieter, 3,838,011.
Lippert, Werner; Bernt, Erich; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, 3,838,065.

Bergwerksverband GmbH: *See*—
Wagener, Heinrich, 3,837,540.

Berleue, Albert J.; and Dumbaugh, William H., Jr., to Corning Glass Works. Stabilized bismuthate glasses. 3,837,868, Cl. 106-47.00r.

Bernot, Jean, to Trefilunion. Machine and method for producing an expansible cylindrical lattice structure, in particular for a reinforcement of a pipe having a socket. 3,837,372, Cl. 140-92.200.

Bernt, Erich: *See*—
Lippert, Werner; Bernt, Erich; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, 3,838,065.

Berntsson, Peder Bernhard; Gaarder, Jan Ornulf; and Lamm, Bo Robert, to Aktiebolaget Astra. α(N-Acyl)-amino aids and a process for preparing same. 3,838,027, Cl. 204-74.000.

Berriman, Lester P.: *See*—
Englert, Robert D.; Berriman, Lester P.; and Rendall, John L., 3,837,900.

Bersier, Henri, to Societe anonyme Surtec. Installation for the incineration of household refuse and industrial waste. 3,837,302, Cl. 110-8.00c.

Bertherchur, Clau; Wenzier, Manfred; and Schultze, Hans-Joachim, to Inventa AG fur Forschung und Patentverwertung, Zurich. Process for the production of hardenable cycloaliphatic glycidyl ethers. 3,838,175, Cl. 260-348.00r.

Bertorelli, Orlando L.; Mays, Robert K.; Williams, Lloyd E.; and Zimmerman, Howard F., Jr., to Huber, J. M., Corporation. Production alkali metal polysilicates. 3,838,192, Cl. 423-334.000.

Bertorelli, Orlando Leonard, to Huber, J. M., Corporation. Production of rod-shpaed micro-crystallites from clay. 3,837,877, Cl. 106-288.00b.

Bettini, Giuseppe; and Romano, Carlo, to Olivetti, Ing., C., & C., S.p.A. Apparatus for recording and/or playing back a magnetic tape contained in a cassette. 3,838,459, Cl. 360-96.000.

Betz Laboratories, Inc.: *See*—
Carter, David A.; Bishof, Chester A.; and Vogt, Frederick G., 3,837,803.

Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., to Gulf Research & Development Company. Demetallization process using iron-containing catalysts. 3,838,042, Cl. 208-251.00h.

Bevaknings AB Securitas: *See*—
Andersson, Ingvar, 3,838,283.

Bex, Hans, to U.S. Philips Corporation. Microstrip filter comprising a ferromagnetic resonant body. 3,838,367, Cl. 333-73.00s.

Biard, James F. Phototransistor having a buried base. 3,838,439, Cl. 357-30.000.

Bieber, Clarence George, to International Nickel Company, Inc., The. Corrosion resistant ferritic stainless steel. 3,837,847, Cl. 75-128.000.

Biewer, Frank N., to Offshore Technology Coporation. Stably buoyed floating offshore device. 3,837,309, Cl. 114-.50d.

Bille, Horst, to Regentrop & Bernard KG. Ribbon spool having plastic discs and a metal core. 3,837,463, Cl. 197-175.000.

Billeg, Robert P., Jr., to Honeywell Information Systems, Inc. Apparatus for using start-up of a crystal oscillator to synchronize power turn-on in various portions of a system. 3,838,357, Cl. 331-74.000.

Biomatics Instrument Corporation: *See*—
Becker, Stanley A.; Fizett, William B.; and Wood, Richard T., 3,837,795.

Birke, Lutz Georg; Jebens, Aksel; Ryuter, Ivar Eystein; and Dyvik, Froystein, to Det Norske Zinkkompani A/S. Process for the removal of mercury from gases. 3,838,190, Cl. 423-210.000.

Bishof, Chester A.: *See*—
Carter, David A.; Bishof, Chester A.; and Vogt, Frederick G., 3,837,803.

Bishop, Homer L. Method of making flexible magnetic printing plates. 3,837,959, Cl. 156-246.000.

Bittern, Joseph E., to Capewell Manufacturing Company. Hole saw and quick disconnect drive therefor. 3,837,759, Cl. 408-204.000.

Bixby, William E., to Dick, A. B., Company. Method of reclaiming selenium and metal base from electrophotographic plates. 3,837,815, Cl. 23-293.00r.

Black and Decker Manufacturing Company, The: *See*—
O'Connor, William Harvey, III, 3,838,300.

Black, Sivalls & Bryson, Inc.: *See*—
Ebeling, Harold O.; and Smith, Russell D., 3,837,813.

Blacker, Harold F., to Campbell Soup Company. Process and apparatus for eviscerating poultry. 3,837,045, Cl. 17-11.000.
Blank, Artur, to Abbott Laboratories. Preparation of 2-chloro-3-aminopyridine. 3,838,136, Cl. 260-296.00r.
Blanton, Charles DeWitt, Jr.; and Johnson, Herbert G. Lower alkyl (3-cyano-pyrrol-2-yl) oxamates. 3,838,166, Cl. 260-326.200.
Blochl, Walter, to FMC Corporation. Polyfluoroureas. 3,838,165, Cl. 260-309.700.
Blohm Thomas R.: *See*—
Grisar, J. Martin; Claxton, George P.; Blohm Thomas R.; and Roberts, Edward McC., 3,838,151.
Blok, Onno Jan Theodoor: *See*—
Theodorus, Adrianus; and Blok, Onno Jan Theodoor, 3,837,131.
Blome, Frederick C.: *See*—
Williams, Michael J.; Blome, Frederick C.; and Hueter, Otto W., 3,837,987.
Bloomingdale, Jack W. Safety plug. 3,838,385, Cl. 339-196.00a.
Bobeck, Andrew Henry; Levinstein, Hyman Joseph; and Shick, Larry Keith, to Bell Telephone Laboratories, Incorporated. Magnetic devices utilizing garnet expitaxial materials and method of production. 3,837,911, Cl. 117-235.000.
Bocharov, Vladislav Ivanovich: *See*—
Golantsev, Oleg Alexandrovich; Zhdaneev, Vasily Vasilievich; Bocharov, Vladislav Ivanovich; and Bodrov, Evgeny Dmitrievich, 3,837,140.
Bock, Nils Erik, to Morgardshammar Aktiebolag. Guide roller in roller guides. 3,837,553, Cl. 226-194.000.
Bock, Nils Erik, to Morgardshammar AB. Roller guide including axial bearings. 3,837,715, Cl. 308-6.00r.
Bode, Charles H., Jr., to United States Steel Corporation. Continuous casting machine embodying a self-aligning and flexing guide-roll rack. 3,837,390, Cl. 164-260.000.
Bodine, Albert G. Torque converter transmission system. 3,837,239, Cl. 74-843.000.
Bodrov, Evgeny Dmitrievich: *See*—
Golantsev, Oleg Alexandrovich; Zhdaneev, Vasily Vasilievich; Bocharov, Vladislav Ivanovich; and Bodrov, Evgeny Dmitrievich, 3,837,140.
Boehringer Ingelheim G.m.b.H.: *See*—
Maier, Roland; and Muller, Erich, 3,838,162.
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Boehringer Mannheim GmbH: *See*—
Hagen, Alexander; Bergmeyer, Hans Ulrich; Gruber, Wolfgang; Beaucamp, Klaus; and Jaworek, Dieter, 3,838,011.
Lippert, Werner; Bernt, Erich; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, 3,838,065.
Boeing Company, The: *See*—
Cole, James Byron, 3,837,601.
Williams, John W., 3,837,313.
Bogdanovs, Andris, to Crouse-Hinds Company. Globe and globe guard for a lighting fixture. 3,838,269, Cl. 240-102.00r.
Bohman, Knut Goran; and Dudnik, Andre, to Telefonaktiebolaget Ericsson, L. M. Coaxial cable transmission line. 3,838,230, Cl. 179-170.00a.
Bojorkman, Bengt Harry, to U.S. Philips Corporation. Switched frequency communications system with automatic phase and amplitude compensation. 3,838,342, Cl. 325-32.000.
Bokuda, Yoshiyuki: *See*—
Kanno, Isawo; Takashima, Toshiyuki; and Bokuda, Yoshiyuki, 3,838,091.
Bolanz, Gerrit M. Storage device for coins and similar objects. 3,837,475, Cl. 206-.800.
Boldt, Jurgen: *See*—
Mayer-Mader, Rudolf; and Boldt, Jurgen, 3,838,140.
Bond, William C., Jr., to Copolymer Rubber & Chemical Corporation. Silyl-norbornene and interpolymers prepared of same. 3,838,115, Cl. 260-80.710.
Bondarenko, Oleg Petrovich: *See*—
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.
Bongers, Piet Frans; Wittekoek, Stefan; and Popma, Theo Johan August, to U.S. Philips Corporation. Thermomagnetic recording and magneto-optic reading of a medium having bismuth ions in a garnet structure. 3,838,450, Cl. 360-59.000.
Bonny, Jean-Pierre, to Portescap. Chronocomparator diagram reader. 3,837,083, Cl. 33-1.00c.
Boone, Philip. Supplemental sheet-dispensing device for a toilet-tissue dispenser. 3,837,595, Cl. 242-55.300.
Boontje, Jan Th., to Verenigde Kunstmestfabrieken Mekog-Albatros N.V. Rotating disc contactor. 3,837,812, Cl. 23-273.00f.
Boothman, David Richard; and Nutt, David Walter, to Canadian General Electric Company, Limited. Detector for reverse and open phase in a three phase circuit. 3,838,314, Cl. 317-48.000.
Borden, Inc., mesne: *See*—
Bradbury, Robert C.; and Sullivan, Joseph H., 3,837,569.
Borg-Warner Corporation: *See*—
Newton, Alwin B., 3,837,396.
Tomlinson, Bayne B., 3,838,238.
Boris, Sam; and Nye, Larry R., to Data Processing Aids, Inc. Auxiliary cabinet for computer console. 3,837,720, Cl. 312-198.000.
Bosch, Robert, GmbH: *See*—
Anselment, Wolfgang; and Holl, Walter, 3,838,207.
Burger, Karl-Heinz; Hoffmann-Clewe, Manfred; and Schaper, Willi, 3,837,036.
Links, Heinz, 3,837,324.
Sauer, Rudolf, 3,837,321.
Ulbrich, Gerhard, 3,837,032.
Bosch, Samuel. Mattress and mattress foundation. 3,837,020, Cl. 5-317.00r.
Bosse, Frank: *See*—
Marquardt, Bruno; and Bosse, Frank, 3,837,564.
Bottum, Edward W.: *See*—
Rockwell, Frank H.; and Bottum, Edward W., 3,837,177.
Boucher, Raymond M. G., to Wave Energy Systems Inc. Apparatus for continuous sterilization at low temperature. 3,837,805, Cl. 21-102.00a.
Boucher, Richard A., to Dart Industries Inc. Combined food storage container and mold therefor. 3,837,775, Cl. 425-195.000.
Boudreau, Donald A. Drawer arranger. 3,837,477, Cl. 206-72.000.
Bourhenne, Francis Kurt. Coiled cable dispenser. 3,837,597, Cl. 242-129.000.
Boussois S. A.: *See*—
Membre, Bernard Alfred Georges; and Clairet, Daniel Eugene Joseph Modeste, 3,837,064.
Bowden, Roy Dennis, to Imperial Chemical Industries Limited. 3,838,157, Cl. Process for producing bipyrid.
Bozak, Inc.: *See*—
Bozak, Rudolph T., 3,837,425.
Bozak, Rudolph T., to Bozak, Inc. Edge-damped diaphragm for electrodynamic loudspeakers. 3,837,425, Cl. 181-32.00r.
Braca, Joseph F.: *See*—
Hynes, John E.; and Braca, Joseph F., 3,838,252.
Brachman, Armand Edward, to GAF Corporation. Polyurethane prepared from hydroxy poly (methylene oxide), polyester, and glycol and having improved hydrolytic stability. 3,838,105, Cl. 260-75.0np.
Brackette, Daniel, Jr., to Owens-Illinois, Inc. Paperboard container with integral carrying means. 3,837,563, Cl. 229-52.00b.
Bradbury, Robert C.; and Sullivan, Joseph H., to Borden, Inc., mesne. Metric conversion ruller. 3,837,569, Cl. 235-70.00r.
Bradbury, Wilburn F. Edge sharpener. 3,837,123, Cl. 51-208.000.
Bradwood (Proprietary) Limited: *See*—
Sherwood, Robert F., 3,837,487.
Brancaccio, Giovanni: *See*—
Viterbo, Rene; Brancaccio, Giovanni; and Perri, Giulio Cesare, 3,838,123.
Brand, Derek A.; and Imatt, Alexander, to Glass, Marvin, & Associates. System for operation miniature vehicles. 3,837,286, Cl. 104-60.000.
Brandeberry, Don R.: *See*—
Fritch, Junior L.; and Brandeberry, Don R., 3,837,764.
Brandlein, James D.; and Potter, Max E., to Western Electric Company, Incorporated. Insertable electrical termination mounting. 3,838,203, Cl. 174-68.500.
Brandt, William F., to GTE Automatic Electric Laboratories Incorporated. Logic test probe and indicator circuit. 3,838,339, Cl. 324-133.000.
Brassel, Peter, to Zellweger, Ltd. Device for severing yarns in yarn cleaners. 3,837,252, Cl. 83-688.000.
Braun, Henri: *See*—
Cailley, Jean-Pierre; and Braun, Henri, 3,837,925.
Braun, Ralph V.; and Knauer, Audrey J., to Kimberly-Clark Corporation. Water repellent nonwoven material. 3,837,996, Cl. 161-156.000.
Braunschweigische Maschinenbauanstalt: *See*—
Hillebrand, Heinrich; and Schaper, Helmut, 3,837,913.
Bredtmann, Manfred: *See*—
Gehrmann, Klaus; Erpenbach, Heinz; Handte, Heinz; and Bredtmann, Manfred, 3,838,018.
Brems, John Henry. Mechanical drive for transfer system. 3,837,473, Cl. 198-219.000.
Breslow, Jeffrey D., to Glass, Marvin, & Associates. Aerial-projectile game having movable rebounding surfaces. 3,837,648, Cl. 273-95.00r.
Bretti, Franco; and Valie, Franco, to Olivetti, Ing., C., & C., S.p.A. Coded input and output apparatus for typewriters. 3,837,458, Cl. 197-19.000.
Bricot, Claude; Le-Merer, Jean Pierre; and Puech, Clude, to Thomson CSF. Systems for constructing small fresnel holograms. 3,837,725, Cl. 350-3.500.
Bridge, Samuel Douglas, to Dixon, R. G., & Company, Limited. Floor treating machines. 3,837,028, Cl. 15-50.00r.
Bridges, Ronald P. Electric circuit disconnect means for a power transmission line. 3,838,233, Cl. 200-48.00r.
British Hovercraft Corporation: *See*—
Crewe, Peter Rowland, 3,837,314.
British Steel Corporation: *See*—
Hetherington, Matthew James; and Atkinson, Peter, 3,837,202.
Broers, Godefridus: *See*—

Van Esdonk, Johannes; Broers, Godefridus; Haans, Petrus Franciscus Antonius; and Hornman, Johannes Petrus, 3,837,958.

Broling, Fred W.: *See*—
Matras, Edward J.; and Broling, Fred W., 3,837,629.

Brollos, Gunther. Pants pressing machine. 3,837,543, Cl. 223-73.000.

Brooke, Arthur Alan, to Delamere & Williams Company, Limited. Article handling apparatus. 3,837,474, Cl. 198-240.000.

Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, to Hoffmann-La Roche Inc. Process for the preparation of alkyl substituted resorcinols. 3,838,181, Cl. 260-625.000.

Brotschi, Rolf Peter. Method and system for keeping record of the contents of a container. 3,837,104, Cl. 40-104.180.

Brown & Williamson Tobacco Corporation: *See*—
Sexstone, John H., 3,837,264.
Stungis, George E.; Merker, Steve L.; and Heitkamp, Norman D., 3,837,481.

Brown, Anthony Kevin Dale, to Northern Electric Company Limited. Digital-analog subterminal. 3,838,416, Cl. 340-347.0da.

Brown, Craig T., to Miller, Mildred. Pest control apparatus and method. 3,838,418, Cl. 340-384.00e.

Brown, Donald C. Refuse truck container handling mechanism. 3,837,512, Cl. 214-302.000.

Brown, Donald R.; Linsley, John W., Jr.; and Porod, Robert F., to Western Electric Company, Incorporated. Encapsulated electrical component assembly and method of fabrication. 3,838,316, Cl. 317-101.00r.

Brown, John H., Jr.; and Atkins, Boby L., to Dow Chemical Company, The. Visible immobilized specimens and method of preparing such specimens. 3,837,979, Cl. 161-18.000.

Brown, Maurice H. Wire tensioning apparatus. 3,837,598, Cl. 242-155.00r.

Brown, Omar L.: *See*—
Schubert, James R.; and Brown, Omar L., 3,837,524.

Brown, Paul; and O'Brien, Joseph. Blood serum collection tube and method. 3,837,376, Cl. 141-1.000.

Brown, Robert A.: *See*—
McCarthy, Robert Joseph, 3,837,673.

Brown, Robert O., to Westinghouse Electric Corporation. Guide vanes for supersonic turbine blades. 3,837,761, Cl. 416-191.000.

Bruckheim, Arthur Jay. Heart surveillance device. 3,837,333, Cl. 128-2.06f.

Bruckner-Apparatebau Michelstadt GmbH: *See*—
Schuierer, Manfred, 3,837,188.

Brundage, R. Pauline; and Lesher, George Y., to Sterling Drug Inc. Certain 2-substituted-6-(3 or 4-pyridyl) nicotinic acid derivitives. 3,838,156, Cl. 260-295.50r.

Brunett, Peter F., to Burroughs Corporation. Wide line ribbon package. 3,837,480, Cl. 206-497.000.

Brunnee, Curt. Device for separating mixtures of gaseous and/or vaporous substances especially for separation of carrier gas in devices for gaschromatography. 3,837,147, Cl. 55-197.000.

Bryceland, Maurice Cyril: *See*—
Graham, Francis David; and Bryceland, Maurice Cyril, 3,837,136.

Bubula, Thomas J., to Caterpillar Tractor Company. Fluidic selector valve. 3,837,360, Cl. 137-625.460.

Buchbinder, Albert J.: *See*—
Buchbinder, Robert I.; and Buchbinder, Albert J., 3,838,015.

Buchbinder, Robert I.; and Buchbinder, Albert J., to Devco Management Inc., mesne. Method and apparatus for pyrolytic decomposition of trash. 3,838,015, Cl. 201-1.000.

Bucher-Guyer AG Maschinenfabrik: *See*—
Hauser, Hans Ulrich, 3,837,536.

Bucyrus-Erie Company: *See*—
Hornagold, John T., 3,837,502.

Buddruss, Claus-Peter; Conjaeger, Arnim; and Triebold, Karl-Friedrich, to Krupp, Fried., Gesellschaft mit beschrankter Haftung. Space monitoring gradient system. 3,838,389, Cl. 340-6.00r.

Budzyna, Joseph M.; and Turner, William E., to Rockwell International Corporation. Fabric take-up mechanism for looms. 3,837,368, Cl. 139-309.000.

Buffiere, Jean-Pierre; and Grenier, Maurice, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Elevating natural gas with reduced calorific value to distribution pressure. 3,837,821, Cl. 48-196.00r.

Buggisch, Heinz; and Lewer, Hans. Compositions for binding dust in coal mines. 3,837,404, Cl. 169-45.000.

Buhrke, Rolfe E.: *See*—
Rice, Verner K.; Mele, John J.; and Buhrke, Rolfe E., 3,838,261.

Buisson, Michel A.; and Repiquet, Gerard P., to Naphtachimie Societe Anonyme. Heat and flame resistant polyurethanes. 3,838,109, Cl. 260-77.5aq.

Bull, Ivor H., to Westinghouse Brake & Signal Co., Ltd. Braking condition indicator for rapid transit trains. 3,838,272, Cl. 246-169.00r.

Bunker Ramo Corporation: *See*—
Bauerle, Gerhard; and Hubner, Oswald, 3,838,388.
Hugo, Alfred Otto, 3,838,380.

Bunker Ramo Corporation, The: *See*—
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Bunker-Ramo Corporation, The: *See*—
Griff, William, 3,837,074.
Johnston, Samuel A.; Lyons, John G.; and Riedmayer, Henry J., 3,837,067.

Bunnell, Edward Dennman, to AMP Incorporated. Molded plastic bundle tie. 3,837,047, Cl. 24-16.0pb.

Burchett, Paul James. Tension adjusting device for sports racket strings. 3,837,649, Cl. 273-73.00a.

Burger, Karl-Heinz; Hoffmann-Clewe, Manfred; and Schaper, Willi, to Bosch, Robert, G.m.b.H. Apparatus for wiping exposed convex surfaces of lenses on head lights of automotive vehicles or the like. 3,837,036, Cl. 15-250.230.

Burroughs Corporation: *See*—
Bardo, Eugene E.; and Schroeder, Franklin T., 3,838,297.
Brunett, Peter F., 3,837,480.

Busdiecker, Lucille L.: *See*—
Busdiecker, Robert A., 3,837,978.

Busdiecker, Robert A.; deceased (by Busdiecker, Lucille L.), to Owens-Illinois, Inc. Barium aluminosilicate glass-ceramics. 3,837,978, Cl. 161-1.000.

Buslik, Walter S.; and Pennington, Dale H., to International Business Machines Corporation. Track following system for magnetic tape recorder. 3,838,453, Cl. 360-70.000.

Busson Christian: *See*—
Alagy, Jacob; Busson Christian; and Cha, Bernard, 3,838,179.

Butt, Gerald L., to Stewart-Decatur Security Systems, Incorporated. Locking and unlocking mechanism. 3,837,117, Cl. 49-18.000.

Buzatu, Corneliu; and Topor, Costica, to Institutul de Metrologie. Transportable standard cells and process for making same. 3,837,923, Cl. 136-88.000.

Byerly, Dale L., to Champion Spark Plug Company. Transfer apparatus. 3,837,472, Cl. 198-218.000.

Cabilio, Juta: *See*—
Magnien, Ernest; and Cabilio, Juta, 3,838,135.

Cable reel assembly: *See*—
Pollak, Edward George, 3,837,590.

Cadeo, Angelo; and Cavelti, Josef, to Frebar A.G., mesne. Method and apparatus for dissolving sugar and other soluble solids. 3,837,914, Cl. 127-22.000.

Cailley, Jean-Pierre; and Braun, Henri, to Saft-Societe des Accumulateurs Fixes et de Traction. Electrochemical generators. 3,837,925, Cl. 136-134.000.

Cairncorss, Allan, to Du Pont de Nemours, E. I., and Company. Polyamides containing N-lower alkyl 1,2,3-triazole-4,5-dicarbonyl groups. 3,838,112, Cl. 260-78.00r.

Cairns, Robert Lacock; and Benjamin, John Stanwood, to International Nickel Company, Inc., The. Method of producing iron-chromium-aluminum alloys with improved high temperature properties. 3,837,930, Cl. 148-11.50f.

Cali, Albert. Container for packaging papers. 3,837,562, Cl. 229-32.000.

California Injection Molding Co., Inc.: *See*—
VanDeWalker, Roger D.; and Howe, Blair E., 3,837,772.

California Institute of Technology: *See*—
Lewicki, George W.; and Guisinger, John E., 3,837,908.

Calves Jean; and Gounon, Rene, to Societe d'Etude Recherches et Constructions Electroniques. Electronic ambiguity-removal device for phase measurement radionavigation systems, more particularly for the omega system. 3,838,426, Cl. 343-105.00r.

Camboulives, Andre Alphonse Mederic Leon; Chambon, Jean Francois; Jourdain, Gerard Ernest Andre; Le Maout, Theophile Francois; and Vandenbroucke, Roger Alfred Jules, to Societe Nationale d'Etude et de Construction de Moteurs d'Eviation. Variable-geometry nzzle for a jet engine. 3,837,579, Cl. 239-265.390.

Camboulives, Andre Alphonse Mederic Leon; Jourdain, Gerard Ernest Andre; and Le Maout, Theophile Francois, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Nozzles having an adjustable cross-section. 3,837,580, Cl. 239-265.390.

Cambridge Research and Development Group, Greenberg, Sanford D.: *See*—
Pfund, Charles E., 3,838,218.

Campbell, Alan H.: *See*—
Eminger, Harry E.; and Campbell, Alan H., 3,837,617.

Campbell, Robert W., to Phillips Petroleum Company. Amorphous copolyamide from bis(4-aminocyclohexyl) methane, phenyl indane dicarboxylic acid and alkane dicarboxylic acid. 3,838,111, Cl. 260 78.00r.

Campbell Soup Company: *See*—
Blacker, Harold F., 3,837,045.

Canadian General Electric Company, Limited: *See*—
Boothman, David Richard; and Nutt, David Walter, 3,838,314.

Canadian Patents and Development Limited: *See*—
Scott, Peter Michael; and van Walbeek, Wilhelmina, 3,838,171.

Canon Kabushiki Kaisha: *See*—
Masaki, Tatsuo; Hanada, Hiroshi; and Kitashima, Nobuo, 3,837,853.
Ogiso, Mitsutoshi; Hosoe, Kazuya; Takahashi, Kiyoshi; and Itani, Takashi, 3,837,736.

Cantwell, John T.: *See*—
Michalski, Raymind J.; and Cantwell, John T., 3,837,489.

Capacity, Inc.: *See*—
Molby, Lloyd A., 3,837,672.

Capewell Manufacturing Company: *See*—
Bittern, Joseph E., 3,837,759.

Capitol Products Corporation: *See*—
Goss, Lorane C., Jr.; Cribben, James T.; and Miller, Joseph J., 3,837,118.

Caputo, James P., to GTE Automatic Electric Laboratories, Incorporated. Maintenance control arrangement employing data lines for

transmitting control signals to effect maintenance functions. 3,838,398, Cl. 340-172.500.

Carbonnel, Henri: *See—*
Ertaud, Andre; Panossian, Jacques; and Carbonnel, Henri, 3,837,763.

Carborundum Company, The: *See—*
Economy, James; Highsmith, Ronald E.; and Mason, John H., 3,837,997.
Farrell, William F., Jr., 3,838,188.

Carlberg, Bobbie L., to Continental Oil Company. Method of coating the interior surface of a metal vessel and the coated vessel. 3,837,899, Cl. 117-92.000.

Carpentier, Anthony Louis: *See—*
Meadows, James Edward; Horsman, Larry Ray; and Carpentier, Anthony Louis, 3,838,400.

Carr, William Reginald, to Rolls-Royce (1971) Limited. Industrial gas turbine power plant mounting apparatus. 3,837,164, Cl. 60-39.16r.

Carrier Corporation: *See—*
Kuttruff, Gary W.; and Durham, Raymond F., 3,837,173.

Carroll, William J., to Great Lakes Chemical Corporation. Deep implantation of a volatile fungicide. 3,837,304, Cl. 111-6.000.

Carruthers, John Robert; and Kaminow, Ivan Paul, to Bell Telephone Laboratories, Incorporated. Method for producing optical waveguiding layers in solid transparent media. 3,837,827, Cl. 65-30.000.

Carter, David A.; Bishof, Chester A.; and Vogt, Frederick G., to Betz Laboratories, Inc. Orthophosphate corrosion inhibitors and their use. 3,837,803, Cl. 21-2.700.

Carter, Sidney T., to A-T-O Inc. Apparatus for adhesively applying sealing strips to container closures to prevent unauthorized removal of the closures without detection. 3,837,974, Cl. 156-489.000.

Case, Derek Frank, to International Computers Limited. Methods of manufacturing magnetic transducing heads. 3,837,073, Cl. 29-603.000.

Case, J. I. Company: *See—*
Kulhavy, Joseph T., 3,837,182.
Little, William E., 3,837,417.

Case, Oran L. System for converting flatbed to low side trailers. 3,837,702, Cl. 296-36.000.

Cash, David R., to Cash, James, Machine Co. Dual head border panel manufacturing machine. 3,837,305, Cl. 112-3.000.

Cash, James, Machine Co.: *See—*
Cash, David R., 3,837,305.

Cassidy, Herbert W. D.: *See—*
Shaffer, Donald Edward; Cassidy, Herbert W. D.; and Andrews, Walter G., 3,837,281.

Castriota-Scanderbeg, George, to Sulzer Brothers Ltd. Pivoting valve. 3,837,616, Cl. 251-30.000.

Catanzarite, Vincent O., to Specialty Products Development Corporation. Low temperature gas generating compositions and methods. 3,837,942, Cl. 149-83.000.

Catchpole, Clive E., to Galileo Electro-Optics, Corporation, mesne. Method for making hybrid radiant energy sensor with solid state element and transfer energy-sensitive, electron-emissive surface. 3,837,723, Cl. 316-19.000.

Caterpillar Tractor Company: *See—*
Bubula, Thomas J., 3,837,360.

Caule, Elmer J., to Olin Corporation. Method of producing tarnish resistant copper and copper alloys and products thereof. 3,837,929, Cl. 148-6.160.

Cavelti, Josef: *See—*
Cadeo, Angelo; and Cavelti, Josef, 3,837,914.

Cavier, Raymond E.: *See—*
Royer, Rene R.; Demerseman, Pierre G.; Rene, Loic J.; and Cavier, Raymond E., 3,838,173.

Cayton, Thomas C., Jr., to Motorola, Inc. Tape head indexing and shifting apparatus. 3,838,456, Cl. 360-78.000.

Ceccarelli, Pietro, to Olivetti, Ing., C., & C., S.p.A. Top-access cabinet for suspended files and the like. 3,837,722, Cl. 312-276.000.

Cecero, Vincent J. Expandable dentures. 3,837,079, Cl. 32-2.000.

Celanese Corporation: *See—*
Lloyd, Neil E.; and Mather, Walter B., III, 3,837,155.

Celestron Pacific: *See—*
Johnson, Thomas J.; and O'Rourke, John F., 3,837,124.
Johnson, Thomas J., 3,837,125.

Cenco Incorporated: *See—*
Mazurek, Henry E., 3,837,094.

Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See—*
Poos, Arthur Gerard; and Ponghis, Nicolas Gerassimos, 3,837,840.

Centre Technique des industries Mecaniques: *See—*
Flambard, Christian; and Lambert, Alain, 3,837,218.

Certain-Teed Products Corporation, mesne: *See—*
Beck, Carl A., 3,837,971.

Ceske vysoke uceni technicke v Praze: *See—*
Sykora, Richard, 3,837,093.

CF&I Steel Corporation: *See—*
Van Sant, Arthur Dale, 3,837,572.

CGR Medical Corporation: *See—*
Siedband, Melvin P.; James, Jack L.; and Patel, Ambalal T., 3,838,285.

Cha, Bernard: *See—*
Alagy, Jacob; Busson Christian; and Cha, Bernard, 3,838,179.

Chadwick, William H., Jr., to Sherman & Reilly, Inc. Helicopter bundle block. 3,837,623, Cl. 254-134.3pa.

Chakrabarty, Ananda M.: *See—*
Bellamy, Winthrop D.; and Chakrabarty, Ananda M., 3,838,198.

Chamber, James O., to Western Electric Company, Incorporated. Composite wire wrapping bit. 3,837,588, Cl. 242-7.060.

Chambers, Worthy L.: *See—*
Walter, John; Chambers, Worthy L.; and Stipanuk, John M., 3,837,587.

Chambon, Jean Francois: *See—*
Camboulives, Andre Alphonse Mederic Leon; Chambon, Jean Francois; Jourdain, Gerard Ernest Andre; Le Maout, Theophile Francois; and Vandenbroucke, Roger Alfred Jules, 3,837,579.

Champion Spark Plug Company: *See—*
Byerly, Dale L., 3,837,472.

Chance, A. B., Company: *See—*
Rinehart, William M., 3,838,055.

Chanel, Inc.: *See—*
Lehmann, Myrtil B., 3,837,479.

Chang, Joseph J.: *See—*
Arnett, Patrick C.; and Chang, Joseph J., 3,838,405.

Chang, Kuo Wei: *See—*
Aisenberg, Sol; and Chang, Kuo Wei, 3,837,339.

Chao, Yau-Shieng, to Wu, Stanley T.T. and Chao, Yau-Shieng. Bicycle with stepless transmission. 3,837,234, Cl. 74-217.00b.

Chapman, Arthur William. Sterilising procedures. 3,837,809, Cl. 23-253.0tp.

Charas, Seymour. Visual color response apparatus. 3,838,417, Cl. 340-366.00b.

Chartrain, Armand N.; and Newell, Carl W., to Korrosion-Clean-Klamp Co. Battery terminal clamp. 3,838,386, Cl. 339-226.000.

Chase, Vance A., to Whittaker Corporation. Multi-directional reinforced composite and method of making the same. 3,837,985, Cl. 161-55.000.

Chemfix Inc., mesne: *See—*
Conner, Jesse R., 3,837,872.

Chemische Fabrik Kalk GmbH: *See—*
Lewer, Hans, 3,837,280.

Chen, Mao-Chieh: *See—*
Hile, John W.; and Chen, Mao-Chieh, 3,837,905.

Chen, Wai Ming: *See—*
Barnes, Andrew Nicholas Morrison; Chen, Wai Ming; Rickards, Tudor; Rosser, David Arthur; and Thurairajan, Ponnuswamy, 3,838,057.

Cherry, Joe H.: *See—*
Amir, Jacob; and Cherry, Joe H., 3,837,837.

Chesky, Sheldon R.; Patience, Donald; and Hartigan, Edward G., to Kendall Company, The. Conformable nonwoven bandage. 3,837,338, Cl. 128-156.000.

Chiang, John Shu-Chi, to FMC Corporation. Process of etching copper circuits with alkaline persulfate and compositions therefor. 3,837,945, Cl. 156-8.000.

Chida, Yoshinori; and Sawada, Naonobu, to Kabushiki Kaisha Seikosha. High-speed driving device for printer or the like. 3,837,460, Cl. 197-1.00r.

Chrapkowski, Ralph K.: *See—*
Barrett, David M.; and Chrapkowski, Ralph K., 3,838,287.
Prendergast, John F.; Chrapkowski, Ralph K.; and Lang, George R., 3,838,286.

Christen, Karl, to Rephamac A.G. Process for the industrial preparation of desoxyribonucleic acids of high molecular weight. 3,838,148, Cl. 260-211.50r.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Shindo, Minoru; Kakimoto, Morio; and Nagano, Hiroyuki, 3,838,117.

Chun, Sun W.: *See—*
Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,838,042.

Chung, Raymond, to Kimberly-Clark Corporation. Method of controlling the orientation of fibers in a foam formed sheet. 3,837,999, Cl. 162-101.000.

Church, Nathan Lewis, to International Nickel Company, Inc., The. Oxide coated ferrous metal powder. 3,837,845, Cl. 75-.500.

Churchill, William A.: *See—*
Lofstrom, Dennis E.; Churchill, William A.; and Thul, Richard L., 3,837,106.

Chvatal, Leland A.: *See—*
Hopkin, Walker L.; Chvatal, Leland A.; and White, William D., 3,837,353.

Ciba-Geigy AG: *See—*
Litzler, Alfred; Liechti, Hans Wilhelm; Guye-Vuilleme, Jean-Frederic; Koller, Eugen Johann; Milicevic, Branimir; and Angliker, Hans-Joerg, 3,837,802.

Ciba-Geigy AG, mesne: *See—*
Eggensperger, Heinz; Franzen, Volker; and Stephan, Hans, 3,838,100.

Ciba-Geigy Corporation: *See—*
Rajappa, Srinivasachari, 3,838,161.

Cicero, Rocco, 20% to Lee, Raymond, Organization, Inc., The. Anti jack knife apparatus. 3,837,678, Cl. 280-432.000.

Cimini, Peter D. Ring binder. 3,837,680, Cl. 281-16.000.

Cincinnati Butchers' Supply Company, The: *See—*
Cook, Frank M., 3,837,288.

Ciuffini, Anthony J., to Xerox Corporation. Multilayered variable speed photoreceptor and method of using same. 3,837,849, Cl. 96-1.00r.

Cla-Val Co.: *See—*
Zieg, Clifford V.; and Yelich, William, 3,837,358.

Clairet, Daniel Eugene Joseph Modeste: *See—*
Membre, Bernard Alfred Georges; and Clairet, Daniel Eugene Joseph Modeste, 3,837,064.

Clark, Son and Morland Limited: *See—*
Gribbin, Ronald, 3,837,946.

Clarke, Jesse E., to Autoquip Corporation. Door structure for recessed auto lift. 3,837,434, Cl. 187-8.620.

Clarke, William Frank, to Masson Scott Thrissell Engineering Limited. Stands for reels of paper. 3,837,591, Cl. 242-68.400.

Claxton, George P.: *See—*
Grisar, J. Martin; Claxton, George P.; Blohm Thomas R.; and Roberts, Edward McC., 3,838,151.

Clayfield, Eric J., to Shell Oil Company. Treatment of aqueous suspensions of organic waste materials. 3,838,045, Cl. 210-52.000.

Clayton Manufacturing Company: *See—*
Clayton, William, 3,837,219.

Clayton, William, to Clayton Manufacturing Company. Variable inertia flywheel apparatus. 3,837,219, Cl. 73-117.000.

Clemmons, Quentin T.; Coiner, Ronald W.; Jeffrey, William B.; and Kyllonen, Allen W., to Westinghouse Air Brake Company. Slack adjuster for hydro-pneumatic brake unit having automatic air bleed. 3,837,443, Cl. 188-196.00a.

Clorox Company, The: *See—*
Baldwin, Richard F., 3,837,537.

Cobb, Westray Stewart. Cutting board. 3,837,634, Cl. 269-289.000.

Codman & Shurtleff, Inc.: *See—*
Reimels, Harry G., 3,837,950.

Coe, Warren B.; and Davenport, Arthur K., to United Aircraft Corporation. Process for recovering feed products from animal waste. 3,838,199, Cl. 426-55.000.

Coe, William H., to Keystone Consolidated Industries, Inc. Integral spring and cam unit. 3,837,043, Cl. 16-180.000.

Cogan, Frederick Thomas: *See—*
Morrell, Ronald Joseph; Gumb, Bev William; Laing, Graham Sterling; and Cogan, Frederick Thomas, 3,838,229.

Cohen, Leonard D.; Shortt, Brian A.; and Urban, Michael J., to GTE Laboratories, Incorporated. Magneto-resistive magnetic domain detector. 3,838,406, Cl. 340-174.0eb.

Coiner, Ronald W.: *See—*
Clemmons, Quentin T.; Coiner, Ronald W.; Jeffrey, William B.; and Kyllonen, Allen W., 3,837,443.

Cole, Herbert S., Jr., to General Electric Company. Selective etching of metal oxides of tin or indium. 3,837,944, Cl. 156-4.000.

Cole, James Byron, to Boeing Company, The. Aerodynamic slot closing mechanism. 3,837,601, Cl. 244-42.0db.

Colgate-Palmolive Company: *See—*
Smith, Frank R., Jr.; Di Salvo, Walter A.; and Kenney, Edward J., 3,838,072.

Colgate-Palmolive Company, mesne: *See—*
Schaar, Charles H., 3,837,955.

Collin, Heinrich: *See—*
Nudinger, Gunter; Collin, Heinrich; and Moosburger, Hans, 3,837,954.

Collins Radio Company: *See—*
Melvin, William J., 3,838,415.
Schultz, Elmer L.; Tribuno, Robert F.; Hall, John C.; and Schuldt, Theodore J., Jr., 3,837,603.

Columbia Broadcasting System, Inc.: *See—*
Vennola, Jorma, 3,837,115.

Combs, Roscoe, Jr.; and Condon, Richard W., to Roper Corporation. Lubricating system for chain saw. 3,837,433, Cl. 184-15.00r.

Combs, Walter W.: *See—*
Loxley, Ted A.; Barber, Walter G.; Combs, Walter W.; and Webb, John M., 3,837,825.

Commissariat A L' Energie Atomique: *See—*
Abbe, Lucien; Eschbach, Jean Michel; Letang, Roland; and Sachs, Charles, 3,837,065.

Commissariat a l'Energie Atomique: *See—*
Cuaz, Daniel; Pottier, Paul; and Thiery, Daniel, 3,838,061.

Commplex, Inc.: *See—*
Suttill, Francis John, Jr.; Holt, John M.; and Ray, Robert H., 3,838,395.

Communications Satellite Corporation: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Nosaka, Kunishi (said Schmidt, Gabbard, Husted and Maillet assors. to), 3,838,221.

Compagnie des Freins et Signaux Westinghouse: *See—*
Juhel, Bernard, 3,837,618.

Compagnie General des Etablissement Michelin raison Sociale Michelin & Cie: *See—*
Lejeune, Daniel, 3,837,386.

Compagnie Generale de Geophysique: *See—*
Michon, Dominique, 3,838,390.

Compagnie Industrielle des Piles Electriques: *See—*
Henssen, Hans Friedrich, 3,837,921.

Compass Holding Corporation: *See—*
Gladnick, Ronald C., 3,837,509.

Concrete Pipe Machinery Company: *See—*
Gates, Robert H.; and Schneider, Harold G., 3,837,370.

Condon, Richard W.: *See—*
Combs, Roscoe, Jr.; and Condon, Richard W., 3,837,433.

Condux-Werk Herbert A. Merges KG: *See—*
Lehr, Heinz; and Swarat, Walter, 3,837,584.

Conjaeger, Arnim: *See—*
Buddruss, Claus-Peter; Conjaeger, Arnim; and Triebold, Karl-Friedrich, 3,838,389.

Conklin, Alfred R. Leather. 3,837,797, Cl. 8-94.260.

Conn. C. G., Ltd.: *See—*
Southard, James S., 3,837,254.

Conneally, Martin L.; and Hajduk, George, to Ardco, Inc. Refrigerator door closure system. 3,837,119, Cl. 49-404.000.

Conner, Jesse R., to Chemfix Inc., mesne. Method of making wastes non-polluting and disposable. 3,837,872, Cl. 106-74.000.

Connors, Robert H.; and Klopfenstein, King L., to Triangle Package Machinery Company. Bulk weight servo control for packaging machines. 3,837,415, Cl. 177-123.000.

Consoli, Frank J.; Rebechini, Peter G.; and Beisch, Hanspeter E., to Skil Corporation. Rotary hammer power tool. 3,837,409, Cl. 173-48.000.

Container Corporation of America: *See—*
Koboldt, Melvin A., 3,837,523.

Continental Hair Products, Inc.: *See—*
Orsoff, Eli, 3,837,581.

Continental Oil Company: *See—*
Carlberg, Bobbie L., 3,837,899.
Miller, Dale E., 3,838,335.

Control Data Canada, Ltd.: *See—*
McDonald, George B.; and Mackintosh, George B., 3,837,220.

Control Data Corporation: *See—*
Garde, Lawrence; and Ritter, Rolland R., 3,838,448.

Cook, Frank M., to Cincinnati Butchers' Supply Company, The. Accumulative trolley conveyor. 3,837,288, Cl. 104-162.000.

Cook, Jerry J. Pumping device for liquids. 3,837,766, Cl. 417-414.000.

Cooke, Harry G. Jr., to Du Pont de Nemours, E. I., and Company. Blasting cartridge and primer. 3,837,279, Cl. 102-24.00r.

Coolidge, Anson S., to United Aircraft Products, Inc. Wing surface cooler. 3,837,395, Cl. 165-47.000.

Cooper, Gleen D.: *See—*
Bennett, James G.; and Cooper, Gleen D., 3,838,102.

Cooper, Thomas V. Portable electrically heated combination over boiler and open grate cooking unit. 3,837,270, Cl. 99-339.000.

Copolymer Rubber & Chemical Corporation: *See—*
Bond, William C., Jr., 3,838,115.

Coquyt, Camiel J. Animal trap. 3,837,110, Cl. 43-87.000.

Cordeiro, Rodney R.: *See—*
Petrides, Petros T.; Nickerson, Russell J.; Cordeiro, Rodney R.; and Dodson, James S., Jr., 3,838,244.

Corn, Prentice R.: *See—*
Wolf, Walter A.; Gebhardt, Wallace A.; and Corn, Prentice R., 3,838,236.

Corning Glass Works: *See—*
Amos, Lynn G.; and Howard, Charles A., 3,837,731.
Bagley, Rodney D., 3,837,783.
Berleue, Albert J.; and Dumbaugh, William H., Jr., 3,837,868.
Dumbaugh, William H., Jr., 3,837,867.
Malmendier, Joseph W.; and Sojka, Joseph E., 3,837,866.

Corrado, Alfred G. Brassiere fastener. 3,837,049, Cl. 24-201.0cf.

Cotton, Barton Lester: *See—*
Humiston, Gerald Francis; and Cotton, Barton Lester, 3,837,491.

Cotton, Incorporated: *See—*
Wilson, Katherine W.; Swidler, Ronald; and Gamarra, Jose P., 3,837,799.

Cotton, Joseph Bernard; Mack, Peter Albert; and Price, Raymond, to Imperial Chemical Industries Limited and Imperial Metal Industries (Kynoch) Limited. Benzotriazole pre-lamination treatment of metal substrates. 3,837,964, Cl. 156-331.000.

Council on Library Resources, Inc., mesne: *See—*
Walker, Bernard F.; and Kusterer, James E., Jr., 3,837,804.

Coussot, Gerard J., to Thomson-CSF. Monolithic electro-mechanical filters. 3,838,366, Cl. 333-72.000.

Couture, Gerard; and Lindberg, Leo H., to PPG Industries, Inc. Heated cover protector for press bending block. 3,837,833, Cl. 65-288.000.

Cox, Donald Clyde, to Bell Telephone Laboratories, Incorporated. Bipolar sample and hold circuit with low-pass filtering. 3,838,346, Cl. 328-151.000.

Coyne, James Christopher, to Bell Telephone Laboratories, Incorporated. Cross connect switch. 3,838,317, Cl. 317-119.000.

Cozzarin, Virgil J.: *See—*
Kipple, Harry P.; and Cozzarin, Virgil J., 3,837,717.

CPC International Inc.: *See—*
Johnson, Calvin K.; and Craig, Robert S., 3,838,095.

Craig, Fred A.: *See—*
Ross, Lee F.; Wilkinson, James E.; Craig, Fred A.; and Hudson, Allan M., 3,837,774.

Craig, Glenn D.; Feuling, David T.; and LaHaye, Paul G., to Aqua-Chem, Inc. Reduction of gaseous pollutants in combustion fuel gas. 3,837,788, Cl. 431-351.000.

Craig, Robert S.: *See—*
Johnson, Calvin K.; and Craig, Robert S., 3,838,095.

CRC-Crose International, Inc.: *See—*
Foster, Robert Don, 3,837,698.

Crewe, Peter Rowland, to British Hovercraft Corporation. Fluid cushion supported vehicles. 3,837,314, Cl. 114-67.00a.

Cribben, James T.: *See—*

Goss, Lorane C., Jr.; Cribben, James T.; and Miller, Joseph J., 3,837,118.

Crist, Elmer E.: *See—*
Skinner, Eugene S.; Crist, Elmer E.; and Phelps, Louis D., 3,837,658.

Criswell, Richard R. Playing table with base for holding fluid therein. 3,837,645, Cl. 273-3.00c.

Crompton & Knowles Corporation: *See—*
Rust, Edgar C., Jr., 3,837,977.

Crook, Evan H.; and Kittle, Paul A., to Rohm and Haas Company. Removal of residual organoleads from organic liquids. 3,838,043, Cl. 208-251.00r.

Crooks, Gary V. Ozone generating means. 3,838,290, Cl. 250-532.000.

Crouse-Hinds Company: *See—*
Bogdanovs, Andris, 3,838,269.

Crown Cork & Seal Company, Inc.: *See—*
Wright, George, 3,837,037.

Csatlos, Geza M., to Akron Standard, division of Eagle-Picher Industries, Inc. Telescoping tube assembly. 3,837,689, Cl. 285-302.000.

Csurgay, Gregory N. Magnetic combination door lock. 3,837,193, Cl. 70-276.000.

Cuaz, Daniel; Pottier, Paul; and Thiery, Daniel, to Commissariat a l'Energie Atomique. Method of packaging of radioactive wastes. 3,838,061, Cl. 252-301.10w.

Cuddigan, Robert W.: *See—*
Menough, Richard M.; and Cuddigan, Robert W., 3,837,387.

Cunningham, Ernest R., to Grip-Pak, Inc., mesne. Stretchable packaging device for containers. 3,837,478, Cl. 206-427.000.

Cupp, Frederick B.; and van Camp, Gary, to Edmac Associates, Inc. Event recording system. 3,838,445, Cl. 360-18.000.

Curran, Frank J., to Curran, Frank J., Co. Perfumed package for a solid diffusing material. 3,837,574, Cl. 239-57.000.

Curran, Frank J., Co.: *See—*
Curran, Frank J., 3,837,574.

Curry, Jerome: *See—*
Terrell, James L.; and Curry, Jerome, 3,837,350.

Curtis, Betty L.: *See—*
Curtis, George B.; and Curtis, Betty L., 3,837,701.

Curtis, George B.; and Curtis, Betty L., 20% to Lee, Raymond, Organization, Inc., The. Camper mounting apparatus. 3,837,701, Cl. 296-23.0mc.

Cusano, Dominic A., to General Electric Company. X-ray image intensifier input. 3,838,273, Cl. 250-213.0vt.

Cuscurida, Michael: *See—*
Moss, Philip Hotchkiss; and Cuscurida, Michael, 3,838,076.

Cushing, Donald S.: *See—*
Jenkins, Thomas E.; and Cushing, Donald S., 3,837,917.

Cutler-Hammer, Inc.: *See—*
Papaieck, Robert J., 3,838,355.

Cutting Equipment Leasing, Inc.: *See—*
Kuchuris, Louis G.; and Gembicki, Stanley, 3,837,560.

Cyprus Mines Corporation: *See—*
Baak, Tryggve, 3,837,582.

Dahlke, Grace L. Disposable pocketed manual refuce collector. 3,837,696, Cl. 294-1.00r.

Daicel Ltd.: *See—*
Kageyama, Osamu; Kai, Manabu; and Yokoo, Horosi, 3,838,020.

Daimler-Benz Aktiengesellschaft: *See—*
Barenyi, Bela; and Renner, Hermann, 3,837,668.
Keller, Manfred; and Hoffmann, Jochen, 3,837,040.
Rossler, Heinrich; Korner, Wilhelm; Voshage, Rudolf; Wendeborn, Jurgen; and Fortenbacher, Friedrich, 3,837,237.

Dake Corporation: *See—*
Kihnke, Lee S., 3,837,469.

Dakhov, Mark Illarionovich; Nesterov, Pavel Petrovich; Semkin, Alexei Trofimovich; Alexeeva, Ljudmila Andreevna; Sakhnovsky, Arkady Zinovievich; Skrypnik, Ivan Timofeevich; Klimovsky, Lev Lvovich; and Miroshnichenko, Viktor Alexandrovich. Rope-twisting macine. 3,837,152, Cl. 57-9.000.

Dalton, Ralph Warren: *See—*
Moffitt, Charles Rayburn; and Dalton, Ralph Warren, 3,837,099.

Damijonaitis, Algis, to Motorola, Inc. Method of construction and structure for a magnetic pickup. 3,838,372, Cl. 336-110.000.

Damm, David A.; and Scherf, Gerald F., to Owens-Illinois, Inc. Speed control system. 3,838,321, Cl. 318-66.000.

Damsky, Ben Lee: *See—*
Frind, Gerhard; Owen, Michael; and Damsky, Ben Lee, 3,838,375.

Dandurand, Thomas G. Apparatus for installing pull lines. 3,837,624, Cl. 254-134.400.

Danfoss A/S: *See—*
Jensen, Arne, 3,838,331.

Danielsen, Daniel, to Bell Telephone Laboratories. Switching network control circuit. 3,838,227, Cl. 179-18.0gf.

Dao, Tich T., to Signetics Corporation. Threshold logic gate. 3,838,393, Cl. 340-146.1ag.

Dart Industries Inc.: *See—*
Boucher, Richard A., 3,837,775.

Dasse-Hartaut, Henri M. J.; and Schneider, Marc J. T., to International Standard Electric Corporation. Airport runway surveillance system with means for determining touch-down dispersion. 3,838,421, Cl. 343-5.01s.

Data Processing Aids, Inc.: *See—*
Boris, Sam; and Nye, Larry R., 3,837,720.

Dauksys, Richard J. Polymers of unsaturated hydrocarbons stabilized with ruthenium tetroxice. 3,838,090, Cl. 260-45.75r.

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Davies, Arthur S., to Kelsey-Hayes Company. Hudraulically operated butt welder. 3,837,558, Cl. 228-3.000.

Davies, Robert Henry. Marine loading/unloading system. 3,837,380, Cl. 141-279.000.

Davis, Alan Russell; Lacey, Raymond Dennis; and Gray, John Meredith, to Avdel Limited. Method and apparatus for blind riveting. 3,837,208, Cl. 72-391.000.

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Davis, Oliver Thurston; and Jones, Norman R. Movable shower head and soap tray assembly. 3,837,013, Cl. 4-145.000.

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De Laney, George B.; and Shannon, Robert D., to Ebonex Corporation. Black pigment and method of making same. 3,837,874, Cl. 106-307.000.

De Villemeur, Philippe, to Etablissements A. Gregoire et L. Barilleau. Safety outlet and plug device. 3,838,381, Cl. 339-21.00r.

Dean, Michael Gordon Ellis; Keen, John Raymond; and Edgington, Geoffrey, to Lucas Aerospace Limited. Aircraft ice detection equipment with correction for severe conditions. 3,838,281, Cl. 250-308.000.

Decker, Hanns; and Hurtmanns, Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method for the maintenance for the 0 & 91 pressure in a circulation lubrication system for highly loaded journal bearings. 3,837,430, Cl. 184-1.00e.

Decker, Hanns; and Hurtmanns, Heinz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Gyratory crusher with hydraulic means for lifting the upper part of the housing from the lower part. 3,837,585, Cl. 241-213.000.

Dediemar, Ronald B.: *See—*
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DeKoning, Cornelis Jan; and Oosterling, Pieter Adriaan, to Visser, H., N.V. Oscillating agricultural implement. 3,837,407, Cl. 172-40.000.

Delamere & Williams Company, Limited: *See—*
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Delatronchette, Claude, to Elf-Union. Method for operating modulated burners actuated by an emulsion. 3,837,784, Cl. 431-4.000.

Delfino, Frank; and Pool, Robert E. Rotary engine. 3,837,323, Cl. 123-8.330.

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Demag Kunststofftechnik GmbH: *See—*
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Detterbeck, Heinrich, to Siemens-Electrogerate GmbH. Cooking tray. 3,838,249, Cl. 219-460.000.

Deussner, Herbert, to Klockner-Humboldt-Deutz AG. Cooling device for kiln material. 3,837,792, Cl. 432-77.000.

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Di Bello, Carmine. Rotating filter for wastewater diological purification. 3,837,492, Cl. 210-150.000.

Di Fazio, Joseph, to Acorn Building Components, Inc. Sheet metal faced slab door. 3,837,134, Cl. 52-619.000.

Di Matteo, Paul L., to Sperry Rand Corporation. Anti-jamming circuit for angle tracking radars. 3,838,423, Cl. 343-7.300.

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Dickmann, Thomas, to Peka-Fahrzeugbau Eberhardt KG. Hitching assembly for hitching a trailer to a towing vehicle. 3,837,679, Cl. 280-491.00e.
Didek, Stanislav; and Storek, Jaroslav, to Vyzkummy Ustav Bavlnarsky. Method of and apparatus for producing finished open end yarn in a spinning chamber. 3,837,153, Cl. 57-35.000.
Diehl, Robert Eugene; and Magee, Richard Joseph, to American Cyanamid Company. Herbicidal composition and method of using 4-alkyl-amino-3-nitroquinolines. 3,837,836, Cl. 71-94.000.
Dietrich, Werner; Reiff, Helmut; Andres, Karlheinz; Niggemann, Johannes; and Roos, Ernst, to Bayer Aktiengesellschaft. Process for the production of hydrophilic foam plastics. 3,838,075, Cl. 260-2.50a.
Dietz, Earl D.; and Wengert, Paul R., to Owens-Illinois, Inc. Method of melting laser glass in a noble metal container in a controlled reducing atmosphere. 3,837,828, Cl. 65-32.000.
Digney, Charles J., to Honeywell Inc. Printing apparatus for multiple-point recorder with selectable number printing. 3,838,430, Cl. 346-61.000.
Dixon, Herd Vrill. Detachable safety warning device. 3,837,626, Cl. 256-64.000.
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Donnell, Daniel C. Quick-connect wheel mounting means. 3,837,708, Cl. 301-1.000.
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Dorsey, Denis Peter; and Rodda, William E., to RCA Corporation. Storage tube focus control. 3,838,311, Cl. 315-12.000.
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Doyle, Daniel C., to Nashua Corporation. Retaining ring for magnetic disc pack assembly. 3,838,464, Cl. 360-137.000.
Doyle, Richard H.; and Obergfell, Allen R., to Fastener Corporation. Pneumatic nailing machine. 3,837,556, Cl. 227-136.000.
Dreier, Melvin E. Stack former. 3,837,506, Cl. 214-9.000.
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Dreyfus, Jean Albert. Amplitude regulator means for separation frequency variations and amplitude variations of electrical signals. 3,838,217, Cl. 179-1.00a.
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Driver, W.B. Downhole electrical core drilling system. 3,837,412, Cl. 175-104.000.
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Duncan, Lloyd P.; and Oberg, Nathan, to Zero Manufacturing Company. Automatic milker release. 3,837,318, Cl. 119-14.080.
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Dunn, Garf L., to Zero Gage Company, mesne. Range-extension device for double-probe hole-location and concentricity gauge. 3,837,085, Cl. 33-174.00q.
Dunn, Richard P., to International Boring Systems Co., Inc. Boring method and improved boring head. 3,837,413, Cl. 175-292.000.
Dunn, William M., to Federal-Mogul Corporation. Method of making a composite high-strength sleeve. 3,837,068, Cl. 29-420.500.
Dur, Herbert, to Konrad Doppelmayr & Sohn, Firma. Device for connecting a sporting device, transport device or the like to the towrope of a tow lift. 3,837,290, Cl. 104-193.000.
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Eggensperger, Heinz; Franzen, Volker; and Stephan, Hans, to Ciba-Geigy AG, mesne. Reaction products of phenol derivatives with phosphorous compounds as stabilizers for polymers. 3,838,100, Cl. 260-45.95c.
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Ewanus, Walter; and Mc Kone, Donald B., to Westinghouse Electric Corporation. Differential encoded quadriphase demodulator. 3,838,350, Cl. 329-104.000.
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Dunn, William M., 3,837,068.

Federal-Mogul Westwind Air Bearings Limited: *See—*
Allen, Nigel Stafford David; and Kammerling, Walter, 3,837,716.

Fehr & Reist AG: *See—*
Muggli, Sergio, 3,837,505.

Fehrer, Ernst. Needle punching machine. 3,837,054, Cl. 28-4.00r.

Feichtmayr, Franz: *See—*
Fischer, Martin; Wiersdorff, Walter-Wielant; Nuerrenbach, Axel; Horn, Dieter; and Feichtmayr, Franz, 3,838,029.

Feller, Arthur G. Method and apparatus for accounting. 3,837,682, Cl. 282-8.00r.

Femipari Kutato Intezet: *See—*
Palovits, Pal; Laar, Tiborne; and Mucsy, Endre, 3,837,614.

Ferguson, Charles N. Grinding apparatus. 3,837,122, Cl. 51-56.000.

Ferguson, George R.: *See—*
Freize, Ronny G.; and Ferguson, George R., 3,837,431.

Ferranti Limited: *See—*
Gracie, Christopher Arthur James, 3,838,402.

Ferri, Beniamino. Mechanical-hydraulic interlocked digital controlled positioning apparatus. 3,838,326, Cl. 318-573.000.

Festner, Theodor. Electrostatic precipitator wall panel. 3,837,145, Cl. 55-146.000.

Feuling, David T.: *See—*
Craig, Glenn D.; Feuling, David T.; and LaHaye, Paul G., 3,837,788.

Feury, Thomas J.: *See—*
O'Brien, Willaim R., 3,837,128.

Fiat-Allis Construction Machinery, Inc., mesne: *See—*
Drone, Gary A., 3,837,449.

Fielkenrood-Vinitex N.V.: *See—*
Pielkenrood, Jacob, 3,837,501.

Filminiature Systems Inc.: *See—*
Wally, Joseph H., Jr., 3,837,742.

Filper Corporation: *See—*
Meissner, Konrad E.; Lane, William A.; and Pelster, Edwin J., 3,837,782.

Filter, Claus, to Vereinigte Osterreichische Eisen- und. Shears for cutting a filling thread in a weaving machine. 3,837,077, Cl. 30-231.000.

Filter, Claus, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft and Etablissement Wanderfield & Co. Electrically operable travelling-field race. 3,837,366, Cl. 139-134.000.

Filter, Walther, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft and Etablissement Wanderfield & Co. Heddle frame center strut. 3,837,365, Cl. 139-92.000.

Fine, Samuel: *See—*
Whetstone, Albert L.; Fine, Samuel; and Banks, William, 3,838,212.

Fineberg, Sumner M. List finder. 3,837,103, Cl. 40-336.000.

Finger, John F.; Jackson, William C.; and Pochop, Merle E., to Sioux Steam Cleaner Corporation. Welding helmet. 3,838,247, Cl. 219-147.000.

Finke, Eugene W., to Monarch Marking Systems, Inc. Label printing and applying apparatus. 3,837,966, Cl. 156-384.000.

Fire Sprinkler Control Company: *See—*
Straley, Robert J.; and Muller, Victor C., 3,837,406.

Firestone Tire & Rubber Company, The: *See—*
Hergenrother, William L.; and Ambrose, Richard J., 3,838,108.

Fischer, Artur. Anchoring device. 3,837,257, Cl. 85-64.000.

Fischer, Karl; and Muller, Anton, to U.S. Philips Corporation. Recording and/or playback apparatus with battery indication controlled by cover position. 3,838,465, Cl. 360-137.000.

Fischer, Martin; Wiersdorff, Walter-Wielant; Nuerrenbach, Axel; Horn, Dieter; and Feichtmayr, Franz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Isomerization of Vitamin A compounds and their derivatives. 3,838,029, Cl. 204-159.000.

Fish, Aaron M., to Unican Secuirty Systems, Ltd. Pin tumbler lock. 3,837,194, Cl. 70-276.000.

Fish, John G.: *See—*
Pollack, Gordon P.; Fish, John G.; and Shortes, Samuel R., 3,837,873.

Fisons Limited: *See—*
Bell, John Howard, 3,837,341.

Fitzsimmons, George W., Jr.: *See—*
Gluntz, Douglas M.; Fitzsimmons, George W., Jr.; Wolf, Siegbert; and Kudirka, Alvydas A., 3,838,002.

Fives Lille-Cail: *See—*
Windal, George, 3,837,811.

Fizett, William B.: *See—*
Becker, Stanley A.; Fizett, William B.; and Wood, Richard T., 3,837,795.

Flambard, Christian; and Lambert, Alain, to Centre Technique des industries Mecaniques. Process for non-destructive measurement of the extent to which a surface layer of a material has been affected by a superficial treatment. 3,837,218, Cl. 73-67.80r.

Flanagan, Thomas P.; and Kaye, Irving I., to National Starch & Chemical Corporation. Manufacture of perfect bound books. 3,837,994, Cl. 161-100.000.

Flann Microwave Instruments Limited: *See—*
Khoury, Khalil Ibrahim, 3,838,338.

Fleissner GmbH: *See—*
Fleissner, Heinz; and Von der Eltz, Hans-Ulrich, 3,837,796.

Fleissner, Heinz; and Von der Eltz, Hans-Ulrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning and Fleissner GmbH. Process and apparatus for fixing synthetic fibrous materials and dyestuffs. 3,837,796, Cl. 8-21.00r.

Fleming, Wayne P.: *See—*
Seliger, Robert L.; and Fleming, Wayne P., 3,838,305.

Flint, Theodore R. Epoxy tape. 3,837,981, Cl. 161-36.000.

Floden, John G., to Kimberly-Clark Corporation. Autogenously bonded composite web. 3,837,995, Cl. 161-150.000.

Florjancic, Peter. Method and device for the manufacture of slide frames. 3,837,953, Cl. 156-108.000.

Flying Dutchman, Inc.: *See—*
Lepley, James W.; and Stoltzfus, John E., 3,837,507.

FMC Corporation: *See—*
Blochl, Walter, 3,838,165.
Chiang, John Shu-Chi, 3,837,945.
Hill, Kenneth Lee; and McCarthy, John Francis, 3,837,834.
Matras, Edward J.; and Broling, Fred W., 3,837,629.
Yelin, Robert E.; Hendrix, James E.; and Villiers, Ralph F., 3,837,798.

Focella, Antonino: *See—*
Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, 3,838,181.

Focke & Pfuhl: *See—*
Focke, Heinz; and Mutschall, Hugo, 3,837,504.

Focke, Heinz; and Mutschall, Hugo, to Focke & Pfuhl. Device for lifting containers in connection with a packing machine. 3,837,504, Cl. 214-6.0ba.

Fogle, Fredric D., to Q.V.S. Inc. Overload relay. 3,838,369, Cl. 335-188.000.

Forget, Ronald D.: *See—*
Renn, Donald W.; and Forget, Ronald D., 3,837,960.

Forhauser, Siegfried: *See—*
Kohl, Helmut; Forhauser, Siegfried; Mantell, Detmar; Granitzki, Karl-Ernst; Hess, Heinrich; and Schiefer, Paul, 3,837,630.

FORMOLD, a division of VCA Corporation: *See—*
Gerk, Richard G., 3,837,535.

Forschungsinstitut fur Textiltechnolgie: *See—*
Ploch, Siegfrid; Klinger, Kurt; and Reif, Joachim, 3,837,943.

Fortenbacher, Friedrich: *See—*
Rossler, Heinrich; Korner, Wilhelm; Voshage, Rudolf; Wendeborn, Jurgen; and Fortenbacher, Friedrich, 3,837,237.

Foss, Theodore H., to Lawter Chemicals, Inc. Novel compounds and pigment compositions embodying same. 3,838,063, Cl. 252-301.20r.

Fossett, Wallace L., to ACF Industries, Incorporated. Cammed railway hopper gate latching apparatus. 3,837,294, Cl. 105-253.000.

Foster, Robert Don, to CRC-Crose International, Inc. Lifting apparatus. 3,837,698, Cl. 294-81.00r.

Foundation: The Research Institute of Electric and Magnetic Alloys: *See—*
Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, 3,837,933.

Fox, Richard; and Tankey, Howard William, to ICI Australia Limited. Explosive compositions with coated gaseous encapsulations. 3,837,937, Cl. 149-4.000.

Fox, Robert B.; and Sturm, Ernst F. Indoor golf game. 3,837,653, Cl. 273-178.00r.

France-Couleur: *See—*
Lebel, Pierre, 3,837,829.

Frankische Isolierrohr-und Metallwaren-Werke Gebr. Kirchner: *See—*
Jenner, Heinrich, 3,837,364.

Franzen, Volker: *See—*
Eggensperger, Heinz; Franzen, Volker; and Stephan, Hans, 3,838,100.

Fraser, Harvey R., Jr.; Larson, Richard T.; and Rinkleib, Helfried O., to International Business Machines Corporation. Information storage articles employing resilient locking sleeves. 3,837,690, Cl. 285-319.000.

Frauenglass, Elliott; and Murray, Bruce D., to Loctite Corporation. Composition and process for sealing surfaces. 3,837,963, Cl. 156-310.000.

Frebar A.G., mesne: *See—*
Cadeo, Angelo; and Cavelti, Josef, 3,837,914.

Fredell, Gary D.; and DeGryse, Gentiel M., to Gulf & Western Industries, Inc. Magnetic slip clutch. 3,837,232, Cl. 74-142.000.

Freize, Ronny G.; and Ferguson, George R., to Murphy, G. W., Industries, Inc. Pulsed metering lubricator. 3,837,431, Cl. 184-7.00d.

French, Michael Joseph. Continuously variable friction drive, having intermediate member engaged on both sides for increased torque transmission. 3,837,233, Cl. 74-200.000.

Freudendahl, Jan, to Jens Axel Freudendahl. Container, especially for agricultural products. 3,837,520, Cl. 220-1.500.

Fridge, David S.: *See—*
Hughes, Michael; and Fridge, David S., 3,838,434.

Friedemann, Wolfgang; and Germscheid, Hans Gunther, to Henkel & Cie GmbH. Sealing anodized aluminum. 3,838,023, Cl. 204-35.00n.

Frind, Gerhard; Owen, Michael; and Damsky, Ben Lee, to General Electric Company. Current limiting fuse. 3,838,375, Cl. 337-276.000.

Frisch, Dorothy Randall: *See—*
Frisch, Erling; and Andrews, Harry N., 3,837,694.

Frisch, Erling; deceased (by Frisch, Dorothy Randall; executrix); and Andrews, Harry N., to Westinghouse Electric Corporation. Hydraulic head closure mechanism. 3,837,694, Cl. 292-256.750.

Fritch, Junior L.; and Brandeberry, Don R., to Robinair Manufacturing Corporation. Multi;stage rotary vacuum pump with separate oil reservoir. 3,837,764, Cl. 417-62.000.

Fritsch, Werner: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,838,146.

Fritz, Heinz-Peter; Treptow, Wolfram; and Faber, Peter, to Rheinisch-Westfalisches Elektrizitatswerk A.G. Chemoresistant electroductive substance and process for making same. 3,837,927, Cl. 148-6.300.

Fritz, Robert; and Simon, Werner, to Siemens Aktiengesellschaft. Method of performing service procedures in a computer controlled telecommunication switching center. 3,838,231, Cl. 179-175.20r.

Fryer, Rodney Ian: *See—*
Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,838,116.

Fuchs, Gundolf: *See—*
Pirck, Dietrich; Fuchs, Gundolf; and Sachse, Gerhard, 3,838,087.

Fuji Photo Film Co., Ltd.: *See—*
Shiba, Keisuke; Sato, Akira; and Ogawa, Akira, 3,837,862.
Tatsuta, Sumitaka; and Ueno, Wataru, 3,837,886.
Tsuji, Nobuo; and Hasegawa, Eiichi, 3,837,859.

Fuji Photo Optical Co., Ltd.: *See—*
Suzuki, Masane; Kanaya, Motonori; and Seki, Kazuhisa, 3,837,726.

Fuji Xerox Co., Ltd.: *See—*
Tanimoto, Kenji, 3,838,344.

Fujiki, Tokio: *See—*
Kosaka, Yujiro; Uemura, Masaru; Fujiki, Tokio; and Saito, Mitsutaka, 3,838,079.

Fujimori, Yoshiaki, to Kabushiki Kaisha Suwa Seikosha. Hard metal watch band. 3,837,163, Cl. 59-80.000.

Fujitsu Limited: *See—*
Maeda, Kazuo; and Shirai, Kazunari, 3,837,935.

Fujiwara, Yoshihiro; and Meki, Norio, to Matsushita Electric Industrial Co., Ltd. Circuit for reducing white balance variations. 3,838,208, Cl. 178-5.4bt.

Fukumoto, Jyuichiro; Yamamoto, Takehiko; and Tsuru, Daisuke, to Kyowa Hakko Kogyo Co., Ltd. Process for producing detergent resisting alkaline protease. 3,838,009, Cl. 195-65.000.

Funayama, Chihito: *See—*
Hoshino, Yoichi; Honda, Kotaro; Funayama, Chihito; and Tanaka, Goro, 3,838,074.

Furuta, Kazuyoshi: *See—*
Hikai, Akio; Kobayashi, Yoshiyuki; and Furuta, Kazuyoshi, 3,837,606.

Gaarder, Jan Ornulf: *See—*
Berntsson, Peder Bernhard; Gaarder, Jan Ornulf; and Lamm, Bo Robert, 3,838,027.

Gabbard, Ova G.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Nosaka, Kunishi, 3,838,221.

Gach, Peter P., to Sunbeam Plastics Corporation. Tamper-proof and child-proof medicine bottle or the like. 3,837,518, Cl. 215-7.000.

Gaetani, Bruno: *See—*
Arrigoni, Virgilio; Gaetani, Bruno; Marchesi, Gianfranco; and Zanoni, Gianfranco, 3,837,165.

GAF Corporation: *See—*
Brachman, Armand Edward, 3,838,105.
Madsen, John S., 3,837,275.
Randall, David I.; and Wynn, Robert W., 3,838,180.
Viro, Felix; Shannahan, Robert Thomas; and Waxman, Burton Harvey, 3,837,852.
Waxman, Burton Harvey; Shannahan, Robert Thomas; and Viro, Felix, 3,837,854.

Gaillochet, Jean R., to MARINONI. Torque-limiting clutch. 3,837,451, Cl. 192-56.00r.

Gaines, Donald Joseph, to Honeywell, Inc. Underspeed/overspeed detector. 3,838,341, Cl. 324-161.000.

Gaitten, Walden M., to Kockum Industries, Inc. Tree cutting apparatus with improved cutting and gripping head assembly. 3,837,382, Cl. 144-34.00e.

Gale, Myron C. Manhole cover puller and method. 3,837,622, Cl. 254-131.000.

Galileo Electro-Optics, Corporation, mesne: *See—*
Catchpole, Clive E., 3,837,723.

Galt, John Kirtland: *See—*
Duguay, Michel Albert; and Galt, John Kirtland, 3,838,278.

Gamarra, Jose P.: *See—*
Wilson, Katherine W.; Swidler, Ronald; and Gamarra, Jose P., 3,837,799.

Gambro AG: *See—*
Hagstrom, Olov; and Riede, Gerhard, 3,837,496.

Game Time, Inc.: *See—*
Ewers, Ronald L., 3,837,610.

Ganther, Kenneth R., Jr.: *See—*
King, Edward J., Jr.; Ganther, Kenneth R., Jr.; and Grillot, Ronald Eugene, 3,838,427.

Garde, Lawrence; and Ritter, Rolland R., to Control Data Corporation. Compensated baseline circuit. 3,838,448, Cl. 360-45.000.

Gardiol, Maurice: *See—*
Recasens, Joseph; and Gardiol, Maurice, 3,837,870.

Gardner, Edward Boyd, to Emhart Corporation. Article inspection system. 3,837,486, Cl. 209-111.700.

Garlock, Inc.: *See—*
Malloy, Edward D.; and Parsons, William L., Jr., 3,837,620.

Gartner, Klaus W.; Van Ryne, Randall Edward; and Higgins, Eldon C., to Sargent & Greenleaf, Inc. Key changing lock for safe deposit boxes. 3,837,:96, Cl. 70-339.000.

Gates, Robert H.; and Schneider, Harold G., to Concrete Pipe Machinery Company. Method for making a pipe reinforcing cage. 3,837,370, Cl. 140-71.00r.

Gates Rubber Company, The: *See—*
Menough, Richard M.; and Cuddigan, Robert W., 3,837,387.
Russ, Paul E., Sr., 3,837,714.

Gauthier, George J., to Pfizer Inc. Di(dialkylaminoalkoxy) phenanthridines as antiviral agents. 3,838,131, Cl. 260-286.00a.

Gauthier, George J. Phenanthridinones as antiviral agents. 3,838,134, Cl. 260-286.00a.

Gazuit, Georges. Vulcanizing press intended for curing radial tires by means of a bladder of toroidal shape. 3,837,770, Cl. 425-33.000.

Gebhardt, Wallace A.: *See—*
Wolf, Walter A.; Gebhardt, Wallace A.; and Corn, Prentice R., 3,838,236.

Gebr. Bohler & Co. AG: *See—*
Tarmann, Bruno A., 3,837,207.

Gebruder Boehringer Gesellschaft mit beschrankter Haftung: *See—*
Schuler, Hermann; and Zeller, Bruno, 3,837,245.

Gebrueder Buehler AG: *See—*
Espeel, Frans Joris, 3,837,615.

Gehlan, Hermann Walter. Vehicle with depositable ramp for the forming of bridges, particularly floating bridges and ferries. 3,837,027, Cl. 14-27.000.

Gehrmann, Klaus; Erpenbach, Heinz; Handte, Heinz; and Bredtmann, Manfred, to Knapsack Aktiengesellschaft. Process for isolating formaldehyde from mixtures of acetic acid, formaldehyde and water by distillation with added water. 3,838,018, Cl. 203-92.000.

Gembicki, Stanley: *See—*
Kuchuris, Louis G.; and Gembicki, Stanley, 3,837,560.

General Dynamics Corporation: *See—*
Baxter, George I.; Rolla, Clarence P.; and Holland, Charles L., 3,837,176.
Petrides, Petros T.; Nickerson, Russell J.; Cordeiro, Rodney R.; and Dodson, James S., Jr., 3,838,244.

General Electric Company: *See—*
Barrett, David M.; and Chrapkowski, Ralph K., 3,838,287.
Beers, Melvin D., 3,837,878.
Bellamy, Winthrop D.; and Chakrabarty, Ananda M., 3,838,198.
Bennett, James G.; and Cooper, Gleen D., 3,838,102.
Bergeron, John A., 3,838,013.
Cole, Herbert S., Jr., 3,837,944.
Cusano, Dominic A., 3,838,273.
Frind, Gerhard; Owen, Michael; and Damsky, Ben Lee, 3,838,375.
Gluntz, Douglas M.; Fitzsimmons, George W., Jr.; Wolf, Siegbert; and Kudirka, Alvydas A., 3,838,002.
Groves, James N., 3,838,034.
Hibbs, Louis E., Jr., 3,837,819.
Jenkins, Thomas E.; and Cushing, Donald S., 3,837,917.
Jenne, Leonard W., Jr., 3,838,306.
Jones, Clifford M.; and Harnden, John D., Jr., 3,838,412.
Jordan, John D., 3,838,312.
Kaduk, Edward E., 3,838,060.
Leete, Bernard D., 3,838,294.
Levy, Samuel, 3,837,550.
Nash, Dudley O.; Lyons, Charles S.; and Hollett, Ronald C., 3,837,411.
Peil, William, 3,838,210.
Prendergast, John F.; Chrapkowski, Ralph K.; and Lang, George R., 3,838,286.
Schmidt, Robert Theodore; and Mulka, John Daniel, 3,838,318.
Seybolt, Alan U., 3,837,901.
Wirth, Joseph G.; and Heath, Darrell R., 3,838,097.

General Motors Corporation: *See—*
Hile, John W.; and Chen, Mao-Chieh, 3,837,905.
Hochstein, Peter A., 3,838,142.
Van House, Robert M.; and Mayne, Jimmy C., 3,837,711.

Georg Fischer Aktiengesellschaft: *See—*
Mayer, Otto Fritz, 3,837,092.

George, David Weinschenk, to Wean United, Inc. Belt carrier device for presses. 3,837,779, Cl. 425-28.00b.

Georgopulos, Thomas; and McCormick, Maurice D., to GTE Automatic Electric Laboratories Incorporated. Case for electrical components. 3,838,213, Cl. 178-46.000.

Gerber, Arthur H., to Horizons Incorporated; a division of Horizons Research Incorporated. 2,6-Diamino-3,5-dinitropyridines and derivatives thereof. 3,838,154, Cl. 260-294.80f.

Gerber Scientific Instrument Company, The: *See—*
Logan, David J., 3,838,258.

Gerk, Richard G., to FORMOLD, a division of VCA Corporation. Plastic dispensing nozzle with reclosable closure cap. 3,837,535, Cl. 222-143.000.

Germer, Horst. Apparatus for thermally recording character patterns. 3,838,431, Cl. 346-76.00r.

Germscheid, Hans Gunther: *See—*
Friedemann, Wolfgang; and Germscheid, Hans Gunther, 3,838,023.

GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft: *See—*
Pristavnik, Rudolf, 3,837,059.

Giblon, Robert P., to Sharp, George G., Inc. Tug-barge system and method. 3,837,315, Cl. 114-235.00r.

Gieles, Antonius Cornelis Maria; Haans, Petrus Franciscus Antonius; and Van Esdonk, Johannes, to U.S. Phillips Corporation. Pressure transducer for liquids or gases. 3,838,379, Cl. 338-42.000.

Gilbert Associates, Inc.: *See—*
White, Donald P., 3,838,289.

Gillette Company, The: *See—*
Hutson, Dwight D.; and Rader, Charles A., 3,838,084.

Ginsburgh, Irwin, to Standard Oil Company. Data receiving storing and imprinting apparatus. 3,837,570, Cl. 235-61.90r.

Girest, George G. Reflectorized sleeves. 3,837,007, Cl. 2-93.000.

Girling Limited: *See—*
Farr, Glynn Philip Reginald, 3,837,354.

Gish, Leonard W. Safety scaffold with electromagnets. 3,837,428, Cl. 182-129.000.

Gist-Brocades N.V.: *See—*
van Velzen, Antoon Gerardus, 3,838,007.

Glaab, Berthold: *See—*
Perschbacher, Otto; Hunke, Friedrich; and Glaab, Berthold, 3,837,586.

Gladnick, Ronald C., to Compass Holding Corporation. Boat alignment apparatus for attachment to boat trailer. 3,837,509, Cl. 214-84.000.

Glass, Marvin, & Associates: *See—*
Brand, Derek A.; and Imatt, Alexander, 3,837,286.
Breslow, Jeffrey D., 3,837,648.

Glaverbel-Mecaniver, mesne: *See—*
Voiturier, Jean-Pierre; and Jacquemin, Francis, 3,837,126.

Gleim, Paul S.: *See—*
Bean, Kenneth E.; Gleim, Paul S.; and Runyan, Walter R., 3,838,441.

Globe Machine Manufacturing Co., Inc.: *See—*
Lumn, George A., 3,837,250.

Gluntz, Douglas M.; Fitzsimmons, George W., Jr.; Wolf, Siegbert; and Kudirka, Alvydas A., to General Electric Company. Jet pump for nuclear reactor. 3,838,002, Cl. 176-65.000.

Glynwed Foundries Limited: *See—*
Provan, Ducan Whyte, 3,837,389.

Godfrey, Janelle R.: *See—*
Godfrey, R. Ira; and Godfrey, Janelle R., 3,837,111.

Godfrey, R. Ira; and Godfrey, Janelle R. Animated toy container. 3,837,111, Cl. 46-11.000.

Goeders, John J., to True Pitch, Inc. Pitching rubber. 3,837,646, Cl. 273-25.000.

Goering, Rodney S., to United States of America, National Aeronautics and Space Administration. Open tube guideway for high-speed air-cushioned vehicles. 3,837,285, Cl. 104-23.0fs.

Goetz, Frederick J., Jr.; and Kalenda, Edward R., to Motorola, Inc. Door hinge. 3,837,044, Cl. 16-184.000.

Goffe, Frederick William Frank: *See—*
Lockwood, Charles Alfred; Goffe, Frederick William Frank; and Julian, Ronald, 3,837,025.

Goken, Garold L.: *See—*
Nelson, Alfred Dwayne; and Goken, Garold L., 3,837,948.

Golantsev, Oleg Alexandrovich; Zhdaneev, Vasily Vasilievich; Bocharov, Vladislav Ivanovich; and Bodrov, Evgeny Dmitrievich. Stacking machine. 3,837,140, Cl. 53-159.000.

Golay, Marcel J. E. Indicia display device. 3,837,102, Cl. 40-28.00c.

Goldfarb, Adolph E.; Strader, George C.; and Strader, Judy D., to Adolph E. Goldfarb. Walking two-legged figure toy with rigid forward extension. 3,837,114, Cl. 46-149.000.

Goldfischer, Lester I., to Singer, Company, The. Microwave interference pattern sensor. 3,838,424, Cl. 343-8.000.

Golding, David R. V.: *See—*
Haury, Vernon E.; and Golding, David R. V., 3,837,938.

Gomez, Juan Bautista Ripoll. Hydraulic jacks for tensioning reinforcement elements. 3,837,621, Cl. 254-29.00a.

Good, Lewis B., Jr. Power operated portable shear device. 3,837,076, Cl. 30-180.000.

Goodhouse, Carl J.; and Niemand, Emil, to Robertshaw Controls Company. Computer cooking means. 3,837,568, Cl. 235-61.00a.

Goodrich, Donald B. Adjustable multi-leg load-carrying sling apparatus. 3,837,697, Cl. 294-74.000.

Goodyear Tire & Rubber Company, The: *See—*
Di Paola, Samuel J., 3,837,982.
Lawrence, John P., 3,838,114.
Marra, Theodore F., 3,837,968.
Mezynski, Stanley M., 3,837,969.

Gormly, John F., to Xerox Corporation. Controller for automatically answering and disconnecting calls to and from telephone interfaced facsimile terminals. 3,838,220, Cl. 179-3.000.

Gorter, Werner; Kresta, Erich; and Stumpf, Horst, to Semperit Aktiengesellschaft. Molded article formed of fiber reinforced material. 3,837,986, Cl. 161-59.000.

Gorynina, Zoya Alexandrovna: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Goss, Lorane C., Jr.; Cribben, James T.; and Miller, Joseph J., to Capitol Products Corporation. Storm window. 3,837,118, Cl. 49-61.000.

Goucher, Robert G., to Hogle-Kearns International. Surgical instrument employing electrically neutral, D.C. induced cold plasma. 3,838,242, Cl. 219-121.00p.

Gounon, Rene: *See—*
Calves Jean; and Gounon, Rene, 3,838,426.

Grace, W. R., & Co.: *See—*
Vaughan, David E. W.; Maher, Philip K.; and Albers, Edwin W., 3,838,037.

Gracie, Christopher Arthur James, to Ferranti Limited. Film strip readout apparatus with movable optical element. 3,838,402, Cl. 340-173.01m.

Graf, Peter; and Roess, Dieter, to Siemens Aktiengesellschaft. Storage medium, method for recording information thereon, and apparatus for retrieving the information therefrom. 3,838,401, Cl. 340-173.01m.

Graham, Francis David; and Bryceland, Maurice Cyril, to Swisslok Company. Devices for connecting two plates. 3,837,136, Cl. 52-760.000.

Granco Equipment, Inc.: *See—*
Phillips, William A., 3,837,794.

Granitzki, Karl-Ernst: *See—*
Kohl, Helmut; Forhauser, Siegfried; Mantell, Detmar; Granitzki, Karl-Ernst; Hess, Heinrich; and Schiefer, Paul, 3,837,630.

Grant, Louis R., Jr.; and Wagner, Ross I., to Rockwell International Corporation. Reaction of beryllium alkyl compounds with mixture of $B_2H_6$ and $B_{10}H_{14}$. 3,837,941, Cl. 149-22.000.

Grant, Roy Arthur, to Tasman Vaccine Laboratories Limited. Processes for the recovery of protein from waste effluents using regenerated cellulose ion-exchange resins. 3,838,143, Cl. 260-112.00r.

Gray, John Meredith: *See—*
Davis, Alan Russell; Lacey, Raymond Dennis; and Gray, John Meredith, 3,837,208.

Gray, Paul R.: *See—*
McCaffrey, Terence P.; and Gray, Paul R., 3,838,440.

Great Lakes Carbon Corporation: *See—*
Hill, James Edward, 3,837,904.

Great Lakes Chemical Corporation: *See—*
Carroll, William J., 3,837,304.

Green, David T., to United States Surgical Corporation. Powering instrument for stapling skin and fascia. 3,837,555, Cl. 227-130.000.

Green, Edgar E., to Abbott, Paul, Co., Inc. Tool bar mounting clamp. 3,837,408, Cl. 172-702.000.

Greenberger, Joseph Irwin, to Wean United, Inc. Strip jointing apparatus for rolling mills and the like. 3,837,559, Cl. 228-4.000.

Greene, Peter Townsend: *See—*
Rau, Hans; Wegener, Joachim Rolf; and Greene, Peter Townsend, 3,837,839.

Greenwald, Michael, to Amtel, Incorporated. Garment display device. 3,837,544, Cl. 223-87.000.

Greenwell, Jack E., to Lear Motor Corporation. Induction motor system with constant horsepower. 3,838,322, Cl. 318-225.00r.

Greenwood, Arthur R.: *See—*
Vesely, Kenneth D.; and Greenwood, Arthur R., 3,838,039.

Greenwood, ARthur R.; and Vesely, Kenneth D., to Universal Oil Products Company. Continuous conversion and regeneration process. 3,838,038, Cl. 208-108.000.

Greiner, Norman Shirk; and Hannington, Norman, to Johns-Manville Corporation. Assembly for press-forming sheet material. 3,838,001, Cl. 162-416.000.

Grenier, Maurice: *See—*
Buffiere, Jean-Pierre; and Grenier, Maurice, 3,837,821.

Gress, Paul William; and Over, William Roderick, to AMP Incorporated. Multi-stroke hand tool. 3,837,211, Cl. 72-410.000.

Gretsky, Yury Yakovelevich: *See—*
Asnis, Arkady Efimovich; Gretsky, Yury Yakovelevich; and Metlitsky, Vladislav Alexandrovich, 3,838,246.

Gribbin, Ronald, to Clark, Son and Morland Limited and I.W.S. Nominee Company Limited. Manufacture of pile fabrics. 3,837,946, Cl. 156-68.000.

Grieve, Robin L.: *See—*
Kolakowski, Richard A.; Grieve, Robin L.; and Tilgner, Peter, 3,837,771.

Griff, William, to Bunker-Ramo Corporation, The. Coaxial interconnections. 3,837,074, Cl. 29-624.000.

Griffith, Glen R.: *See—*
Watson, George A.; and Griffith, Glen R., 3,838,397.

Grigsby, Gilbert R., to Lubrastart International. Starting fluid injection system. 3,837,541, Cl. 222-397.000.

Grillet, Jacques. Wiring connector. 3,838,387, Cl. 339-244.0vc.

Grillot, Ronald Eugene: *See—*
King, Edward J., Jr.; Ganther, Kenneth R., Jr.; and Grillot, Ronald Eugene, 3,838,427.

Grip-Pak, Inc., mesne: *See—*
Cunningham, Ernest R., 3,837,478.

Grisar, J. Martin; Claxton, George P.; Blohm Thomas R.; and Roberts, Edward McC., to Richardson-Merrell Inc. Cycloalkyllactamimides. 3,838,151, Cl. 260-239.00b.

Gross Manufacturing Corporation: *See—*
Williams, Michael J.; Blome, Frederick C.; and Hueter, Otto W., 3,837,987.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Anti-locking braking device. 3,837,712, Cl. 303-21.00f.

Groupement Atomique Alsacienne Atlantique: *See—*
Ertaud, Andre; Panossian, Jacques; and Carbonnel, Henri, 3,837,763.

Groves, James N., to General Electric Company. Apparatus for detection of catalase-containing bacteria. 3,838,034, Cl. 204-195.00b.

Gruber, Wolfgang: *See—*
Hagen, Alexander; Bergmeyer, Hans Ulrich; Gruber, Wolfgang; Beaucamp, Klaus; and Jaworek, Dieter, 3,838,011.
Lippert, Werner; Bernt, Erich; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, 3,838,065.

Grumman Aerospace Corporation: *See—*
Benoit, Robert L.; Peters, Winslow W.; and Morgan, Joseph, 3,837,755.

Grushon, Harold N., to Monarch Marking Systems, Inc. Pinning machine. 3,837,554, Cl. 227-25.000.

Gschwend, Norbert: *See—*
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GTE Automatic Electric Laboratories Incorporated: *See—*
Brandt, William F., 3,838,339.
Caputo, James P., 3,838,398.
Georgopulos, Thomas; and McCormick, Maurice D., 3,838,213.
Lee, David Q.; and McLaughlin, Donald W., 3,838,223.
Lee, David Q.; and McLaughlin, Donald W., 3,838,228.
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Maruscak, John; and Hendry, George McRae, 3,838,239.
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GTE International Incorporated: *See—*
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GTE Laboratories, Incorporated: *See—*
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GTE Sylvania Incorporated: *See—*
Behringer, Cecil; and Kamin, George J., 3,837,880.
McDonough, Thomas B.; and Shaffer, John W., 3,837,786.
Van Der Schoot, Theodore H., 3,837,471.

Guest, Robert J., to Halliburton Company. Self-propelled pipeline plug. 3,837,214, Cl. 73-40.50r.

Guggi, Walter Bernhard. Stabilized inverter. 3,838,333, Cl. 321-45.00r.

Gugle, James E.: *See—*
Wagner, David P.; and Gugle, James E., 3,837,984.

Guida, Michael F. Food-handling guides for refrigerators and freezers. 3,837,100, Cl. 40-2.000.

Guillet, Henri. Improved spring loaded spectacle hinge. 3,837,735, Cl. 351-113.000.

Guisinger, John E.: *See—*
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Gulf & Western Industries, Inc.: *See—*
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Gulf Research & Development Company: *See—*
Beuther, Harold; Chun, Sun W.; and Montagna, Angelo A., 3,838,042.
Kehl, William L.; and Rennard, Raymond J., Jr., 3,838,182.

Gullickson, Cecil F. Sight and sound musical instrument instruction. 3,837,256, Cl. 84-478.000.

Gumb, Bev. William: *See—*
Laing, Graham Sterling; Morrell, Ronald Joseph; and Gumb, Bev. William, 3,838,232.
Morrell, Ronald Joseph; Gumb, Bev William; Laing, Graham Sterling; and Cogan, Frederick Thomas, 3,838,229.

Guptill, Joel P.: *See—*
Sopchak, Peter; and Guptill, Joel P., 3,838,189.

Guse, Rudolf Siegfried. Forging machine. 3,837,209, Cl. 72-402.000.

Gustafsson, Melker Emanuel; Stradalen, Yngve Bertil; and Zander, Erik Gustav Ake, to AB Bofors. Rocket for firing and spreading reflecting material. 3,837,278, Cl. 102-34.400.

Gutridge, Ian Paul, to International Nickel Company, Inc., The. Preparation of cadmium electrodes. 3,837,919, Cl. 136-24.000.

Gutshall, Charles E., to Elco Industries, Inc. Method and apparatus for making a threaded fastener with captive clamping means. 3,837,212, Cl. 72-469.000.

Guye-Vuilleme, Jean-Frederic: *See—*
Litzler, Alfred; Liechti, Hans Wilhelm; Guye-Vuilleme, Jean-Frederic; Koller, Eugen Johann; Milicevic, Branimir; and Angliker, Hans-Joerg, 3,837,802.

Guzzo, Ralph F. Sizing and forming tool. 3,837,213, Cl. 72-479.000.

Gyarmati, Erno; and Nickel, Hubertus, to Kernforschungsanlage Julich GmbH. Process for producing fuel and breeder bodies for a nuclear reactor. 3,838,184, Cl. 264-.500.

Haans, Petrus Franciscus Antonius: *See—*
Gieles, Antonius Cornelis Maria; Haans, Petrus Franciscus Antonius; and Van Esdonk, Johannes, 3,838,379.
Van Esdonk, Johannes; Broers, Godefridus; Haans, Petrus Franciscus Antonius; and Hornman, Johannes Petrus, 3,837,958.

Haas, W. Ernst, and Sohn: *See—*
Schlegel, Joachim, 3,837,539.

Haase, Ernst-Gunter; and Konig, Rudolf, to Messerschmitt-Bolkow-Blohm. Bumper member for a vehicle. 3,837,695, Cl. 293-71.00p.

Haberland, Peter H.; Lay, Frank M.; Murphy, Thomas J.; Skolnik, Marvin B.; Spencer, Oliver S.; Wagner, Peter R.; Whitaker, Howard L.; and Wilson, Donald M., to International Business Machines Corporation. Gas panel fabrication. 3,837,724, Cl. 316-20.000.

Haberle, Walter. Apparatus for automatically cleaning toilet seats. 3,837,018, Cl. 4-233.000.

Habostad, Arne. Paint roller tray with self-contained roller cleaning means. 3,837,035, Cl. 15-257.060.

Hackforth, Bernhard; and Hackforth, Josef, to Vulkan Kupplungs-und Getriebau Bernard Hackforth. Flexible shaft coupling. 3,837,178, Cl. 64-13.000.

Hackforth, Josef: *See—*
Hackforth, Bernhard; and Hackforth, Josef, 3,837,178.

Haede, Werner: *See—*
Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,838,146.

Haeusler, Jochen; Wagnerberger, Wolfgang; and Appiah, Michael, to Siemens Aktiengesellschaft. Analog function generator with magnetic carrier. 3,838,263, Cl. 235-197.000.

Hagedorn, Ferdinand; Wedemeyer, Karlfried; Scherhag, Berhard; and Hausweiler, Arnold, to Bayer Aktiengesellschaft. Catalyst for the production of cyanopyridines. 3,838,068, Cl. 252-437.000.

Hagen, Alexander; Bergmeyer, Hans Ulrich; Gruber, Wolfgang; Beaucamp, Klaus; and Jaworek, Dieter, to Boehringer Mannheim GmbH. Process and apparatus for the quantitative determination of an enzymatically reactive substance. 3,838,011, Cl. 195-103.50r.

Hager, C., & Sons Hinge Manufacturing Company: *See—*
Peterson, Francis C., 3,838,234.

Hagiwara, Miyuki: *See—*
Kagiya, Tsutomu; and Hagiwara, Miyuki, 3,838,030.

Hagstrom, Leonard. Line cord caddy. 3,837,448, Cl. 191-12.400.

Hagstrom, Olov; and Riede, Gerhard, to Gambro AG. Dialysis apparatus. 3,837,496, Cl. 210-321.000.

Hahn, Walter C.: *See—*
Mori, Masahiro; Hahn, Walter C.; and Avitzur, Betzalel, 3,837,066.

Hajduk, George: *See—*
Conneally, Martin L.; and Hajduk, George, 3,837,119.

Hakki, Basil Wahid; and Hwang, Cherng-Jia, to Bell Telephone Laboratories, Incorporated. Gain asymmetry in heterostructure junction lasers operating in a fundamental transverse mode. 3,838,359, Cl. 331-94.50h.

Halbleib, Joseph F., 35% Interest to Sowell, John B. Pulse utilization indication circuit. 3,838,337, Cl. 324-71.00r.

Halcon International, Inc.: *See—*
Barker, Robert S., 3,838,067.

Hall, Charles M. 1,4,7,10-Tetrahydro-1,7-dioxoquino (8, 7-h) quinoline-3,9-dicarboxylate compounds. 3,838,132, Cl. 260-286.00r.

Hall, Charles M.; and Johnson, Herbert G., to Upjohn Company, The. 1,4,5,8,9,12-Hexahydro-4,8,12-trioxopyrido (2,3-f) (1,7) phenanthroline-2,6,10-tricarboxilate compounds. 3,838,133, Cl. 260-286.00r.

Hall, John C.: *See—*
Schultz, Elmer L.; Tribuno, Robert F.; Hall, John C.; and Schuldt, Theodore J., Jr., 3,837,603.

Hall, Richmond E. Golf practice device. 3,837,654, Cl. 273-185.00d.

Halliburton Company: *See—*
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Hallmark Cards, Incorporated: *See—*
Jonathan, Isaac, 3,838,266.

Halter, Allan C., to Allis-Chalmers Corporation. Extensometer with updating at intervals independent of strip speed. 3,838,254, Cl. 235-92.0dn.

Hamanaka, Ernest S.; and Patton, David S., to Pfizer Inc. 6-(Alpha-(guanylureidoalkanoylamino)aracylamino) penicillanic acids. 3,838,153, Cl. 260-239.100.

Hamatsuki, Takeshige: *See—*
Uchida, Hisashi; and Hamatsuki, Takeshige, 3,838,248.

Hamel, Edward E.: *See—*
Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Hamel, Edward E., 3,838,101.

Hamilton, Brian K., to Allied Chemical Corporation. Inflating means for inflatable vehicle restraint systems. 3,837,671, Cl. 280-150.0ab.

Hamm, Heinz, to Rollei-Werk Franke & Heidecke. Photographic lens adapter ring for interchangeable lenses. 3,838,437, Cl. 354-270.000.

Hammarlund, Gudmar; and Johansson, Arne, to Allmanna Svenska Elektriska Aktiebolaget. Time lag relay with a short recovery time. 3,838,319, Cl. 317-141.00s.

Hammer, Frank E., to Searle, G. D., & Co. Photometric method for determining lactic acid dehydrogenase or glucose-6-phosphate dehydrogenase. 3,838,010, Cl. 195-103.50r.

Hammond, Michael R.: *See—*
Pfaffmann, George D.; and Hammond, Michael R., 3,837,934.

Hanada, Hiroshi: *See—*
Masaki, Tatsuo; Hanada, Hiroshi; and Kitashima, Nobuo, 3,837,853.

Hanauer, Burton C., to Hanauer Machine Works Incorporated. Yard marker for football competition. 3,837,317, Cl. 116-133.000.

Hanauer Machine Works Incorporated: *See—*
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Handte, Heinz: *See—*

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Haney, Harold I. Collapsible tossing game target. 3,837,650, Cl. 273-105.00r.

Hangos, Istvan; Varkonyi, Laszlo; Hodacs, Jozsef; and Neuhof-Suski, Laszlo, to Egyesult Izzolanipa es Villamosagi Reszvenytarsasag. Method of producing a corrosion-resisting coating on metallic molybdenum surfaces. 3,837,926, Cl. 148-6.300.

Hanks, Jack G.; and Long, Olan L., to Westinghouse Electric Corporation. Dishwasher inner door panel and gasket arrangement. 3,837,120, Cl. 49-489.000.

Hannington, Norman: *See—*
Greiner, Norman Shirk; and Hannington, Norman, 3,838,001.

Hanson, Clarence A.; and Hanson, Richard A. Rotatable swing bar. 3,837,641, Cl. 272-33.00r.

Hanson, Richard A.: *See—*
Hanson, Clarence A.; and Hanson, Richard A., 3,837,641.

Happ, Marvin B.; Weston, Leonard A.; and Redfield, Carl, to Texas Instruments Incorporated. Electrical contact arm material and method of making. 3,837,818, Cl. 29-196.300.

Harmon, George Lamar: *See—*
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Harmon Industries, Inc.: *See—*
Ballinger, Forrest H.; Farnham, Wilfred L., Jr.; and Heggestad, Robert E., 3,838,270.

Harnden, John D., Jr.: *See—*
Jones, Clifford M.; and Harnden, John D., Jr., 3,838,412.

Harper, Lester E. Device for removing radiator caps. 3,837,242, Cl. 81-3.10r.

Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., to Du Pont de Nemours, E. I., and Company. Tire cord adhesive. 3,838,081, Cl. 260-29.300.

Harris, Philip Brian, to National Research Development Corporation. Sensors. 3,838,282, Cl. 250-372.000.

Harris, Robert M. Traveling scaffold. 3,837,429, Cl. 182-37.000.

Harris, William J.: *See—*
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Harsch, Thomas B., to Hoffman-La Roche Inc. Liquid crystal display. 3,837,729, Cl. 350-160.01c.

Hartigan, Edward G.: *See—*
Chesky, Sheldon R.; Patience, Donald; and Hartigan, Edward G., 3,837,338.

Hartwig, Walter J.: *See—*
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Harvard Enterprises, Incorporated: *See—*
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Harvey, Douglas G.; and Holmes, John F., to Sanders Associates, Inc. Floating power plant. 3,837,308, Cl. 114-.50r.

Hasegawa, Eiichi: *See—*
Tsuji, Nobuo; and Hasegawa, Eiichi, 3,837,859.

Hasegawa, Minoru: *See—*
Takahashi, Kentaro; Hasegawa, Minoru; and Nara, K oru, 3,837,816.

Hashimoto, Reiko: *See—*
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Haskins, Robert William. Stabilizing trailer hitch dolly. 3,837,677, Cl. 280-476.00r.

Hatfield, Walter Bryan; and White, Donald Lawrence, to Bell Telephone Laboratories, Incorporated. Matrix-addressed liquid crystal display. 3,837,730, Cl. 350-160.01c.

Haupt, Fritz, to Maag Gear-Wheel & Machine Company Limited. Gear pump for highly viscous media. 3,837,768, Cl. 418-206.000.

Haury, Vernon E.; and Golding, David R. V., to Rockwell International Corporation. Solid propellant containing fuel-oxidizer component prepared from fused oxidizers. 3,837,938, Cl. 149-17.000.

Hauser, Hans Ulrich, to Bucher-Guyer AG Maschinenfabrik. Plastic injection molding machine. 3,837,536, Cl. 222-146.00c.

Hausweiler, Arnold: *See—*
Hagedorn, Ferdinand; Wedemeyer, Karlfried; Scherhag, Berhard; and Hausweiler, Arnold, 3,838,068.

Havranek, Milan; and Musil, Ivan. Method and apparatus for forming loops in circular knitting machines. 3,837,185, Cl. 66-107.000.

Hayakawa, Wataru: *See—*
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Hayashi, Masaaki: *See—*
Makita, Mutsuo; Hayakawa, Wataru; Hayashi, Masaaki; and Kitagawa, Yukio, 3,837,844.

Hayashi, Takao; and Kojima, Hiroaki, to Asahi Glass Company, Ltd. Novel oil-and water-repellent composition of polymers of fluoroalkyl monomers and diacetoneacrylamide or diacetonemethacrylamide. 3,838,104, Cl. 260-63.0ha.

Hayashibara Company: *See—*
Hijiya, Hiromi; and Hirao, Mamoru, 3,838,006.
Kurimoto, Masashi; and Yoshida, Mikihiko, 3,838,005.

Hayek Engineering Ltd.: *See—*
Schoch, Hans; and Herzog, Josef, 3,837,791.

Haynes, Edward N., Jr. Speakers and crossover circuit. 3,838,215, Cl. 179-1.00d.

Hazeltine Research, Inc.: *See—*
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Heard, James L.; Hoffman, William C.; Opittek, Eugene W.; and Wolfson, Gerald, to Hughes Aircraft Company. Coordinate store digital scan converter. 3,838,420, Cl. 343-5.0sc.

Heath, Darrell R.: *See—*
Wirth, Joseph G.; and Heath, Darrell R., 3,838,097.

Hedermann, Dieter, to Dornier A.G. Redundant electrohydraulic regulating unit. 3,837,262, Cl. 91-365.000.

Hedge, Thomas E.; and Wagner, Donald H., to Diamond Shamrock Corporation. Polyvinylfluoride bearings. 3,838,048, Cl. 252-12.000.

Hedstrom, Folke: *See—*
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Heeren, Richard H., to Teletype Corporation. Random access memory system and cell. 3,838,404, Cl. 340-173.0dr.

Heggestad, Robert E.: *See—*
Ballinger, Forrest H.; Farnham, Wilfred L., Jr.; and Heggestad, Robert E., 3,838,270.

Hegi, Nobumitsu; Kitamura, Takeshi; Saida, Seishiro; and Kawaguchi, Tadao, to Nippon-Steel Corporation. Method and apparatus for inserting paper between plate-shape material. 3,837,636, Cl. 270-45.000.

Heinze, Helmut: *See—*
Otten, Hans; Heinze, Helmut; and Muller, Heinz, 3,837,485.

Heitkamp, Norman D.: *See—*
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Hekimian Laboratories, Inc. 5Active notch filter and dual mode filter/oscillator: *See—*
Hekimian, Norris C., 3,838,351.

Hekimian, Norris C., to Hekimian Laboratories, Inc. 5Active notch filter and dual mode filter/oscillator. . 3,838,351, Cl. 330-104.000.

Held, Edward C., Jr., to Phillips Petroleum Company. Molecularly oriented hollow article, such as a bottle. 3,837,517, Cl. 215-1.00c.

Hellmann, Reinhold: *See—*
Reigler, Paul F.; and Hellmann, Reinhold, 3,838,195.

Hemler, Charles L., Jr.: *See—*
Stine, Laurence O.; and Hemler, Charles L., Jr., 3,838,036.

Henderson, Eulas W., to Phillips Petroleum Company. Processing heated, moisture laden gas containing particulate matter. 3,837,090, Cl. 34-40.000.

Hendrix, James E.: *See—*
Yelin, Robert E.; Hendrix, James E.; and Villiers, Ralph F., 3,837,798.

Hendry, George McRae: *See—*
Maruscak, John; and Hendry, George McRae, 3,838,239.

Hengeli, Steve J. Magnetic filter and method of filtering ferro-magnetic and ethers paramagnetic particulate contaminants from fluids. 3,838,044, Cl. 210-42.000.

Henkel & Cie GmbH: *See—*
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Hennen, Donald E.; and Kusilek, Leroy I., to Minnesota Mining and Manufacturing Company. Composite mat. 3,837,988, Cl. 161-67.000.

Hennion, Jean-Claude M. L.: *See—*
Lefebvre, Michel S. M.; and Hennion, Jean-Claude M. L., 3,837,186.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Epoxy substituted 2,4-dienethioates. 3,838,176, Cl. 260-348.00a.

Henssen, Hans Friedrich, to Compagnie Industrielle des Piles Electriques. Storage oxygen depolarized cell. 3,837,921, Cl. 136-86.00a.

Hergenrother, William L.; and Ambrose, Richard J., to Firestone Tire & Rubber Company, The. Isocyanate extended polymers and the formation of block copolymers. 3,838,108, Cl. 260-77.5cr.

Hermans, Marie E. A.: *See—*
Kanij, Johannes B. W.; Noothout, Arend J.; and Hermans, Marie E. A., 3,838,062.

Herrin, Carlos B., to Monarch Marking Systems, Inc. Method of interpretting a coded record. 3,838,251, Cl. 235-61.11e.

Herrnring, Heinz Gunther, to Montblanc-Simplo GmbH. Socket structure for the ball of a ball point pen refill. 3,837,750, Cl. 401-216.000.

Herzog, Josef: *See—*
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Hess, Heinrich: *See—*
Kohl, Helmut; Forhauser, Siegfried; Mantell, Detmar; Granitzki, Karl-Ernst; Hess, Heinrich; and Schiefer, Paul, 3,837,630.

Hesse, Kurt. Lighting fixture. 3,837,607, Cl. 248-278.000.

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Jecmen, James M.; Jecmen, John J.; Riley, Robert; and Smith, James W., to Preble, Harris, Company. Flush-face elevator door. 3,838,245, Cl. 219-137.000.
Jecmen, John J.: *See—*
Jecmen, James M.; Jecmen, John J.; Riley, Robert; and Smith, James W., 3,838,245.
Jedzinak, John E.; and Zukoski, Ronald, to Avon Products, Inc. Hair waving products and process. 3,837,349, Cl. 132-7.000.
Jefferson Chemical Company, Inc.: *See—*
Moss, Philip Hotchkiss; and Cuscurida, Michael, 3,838,076.
Jeffrey, William B.: *See—*
Clemmons, Quentin T.; Coiner, Ronald W.; Jeffrey, William B.; and Kyllonen, Allen W., 3,837,443.
Jenkins, Thomas E.; and Cushing, Donald S., to General Electric Company. Dishwasher. 3,837,917, Cl. 134-144.000.
Jenne, Leonard W., Jr., to General Electric Company. Electron gun assembly with flexible electrical interconnection for corresponding electrodes and method of fabricating same. 3,838,306, Cl. 313-409.000.
Jenner, Heinrich, to Frankische Isolierrohr-und Metallwaren-Werke Gebr. Kirchner. Flexible sheath for tachometer shafts or the like. 3,837,364, Cl. 138-122.000.
Jens Axel Freudendahl: *See—*
Freudendahl, Jan, 3,837,520.
Jensen, Arne, to Danfoss A/S. Three-phase inverter. 3,838,331, Cl. 321-9.00r.
Jensen, Robert M. Baghouse dust collector. 3,837,151, Cl. 55-341.000.
Jidosha Kiki Co., Ltd.: *See—*
Masuda, Maosuke; Abe, Toshihiro; and Kato, Yoshihiko, 3,837,713.
Joannes, Gustave: *See—*
Sluse, Guy; and Joannes, Gustave, 3,837,879.
Joannou, Constantinos J. Teaching system and devices. 3,838,211, Cl. 178-18.000.
Joeck, Willi Friedrich, to National Rejectors Inc. GMBH. Coin testing device. 3,837,454, Cl. 194-1.00k.
Johansson, Arne: *See—*
Hammarlund, Gudmar; and Johansson, Arne, 3,838,319.
Johansson, Sture A.: *See—*
McTighe, Gilbert T.; and Johansson, Sture A., 3,837,011.
Johns-Manville Corporation: *See—*
Greiner, Norman Shirk; and Hannington, Norman, 3,838,001.
Sherman, James Webster; and Raab, Ronald Buxton, 3,837,992.
Terry, Rupert Douglas, 3,837,138.
Johns-Manville Corporation, mesne: *See—*
Pollak, Edward George, 3,837,590.
Johnsen, Edward L. Rapid production envelope assemblies. 3,837,565, Cl. 229-68.00r.
Johnson & Johnson: *See—*
Kalwaites, Frank, 3,837,046.
Mesek, Frederick K., 3,837,343.
Johnson, Betty. Pattern adjustment. 3,837,084, Cl. 33-17.00r.
Johnson, Calvin K.; and Craig, Robert S., to CPC International Inc. Foundry sand coated with a binder containing novolak resin and urea compound. 3,838,095, Cl. 260-38.000.
Johnson, Daniel E. Photo projection drawing board. 3,837,740, Cl. 353-122.000.
Johnson, Francis: *See—*
Parker, William L.; and Johnson, Francis, 3,838,168.
Johnson, Frank B.; and Palm, Theodore O., to Davis Electric Company. Apparatus and method for continuous spooling. 3,837,589, Cl. 242-25.00a.
Johnson, Hattie, 20% to Lee, Raymond, Organization, Inc., The. Foot-spa cabinet. 3,837,334, Cl. 128-24.300.
Johnson, Herbert G.: *See—*
Blanton, Charles DeWitt, Jr.; and Johnson, Herbert G., 3,838,166.
Hall, Charles M.; and Johnson, Herbert G., 3,838,133.
Johnson, Thomas J.; and O'Rourke, John F., to Celestron Pacific. Method for making replica contour block masters for producing schmidt corrector plates. 3,837,124, Cl. 51-283.000.
Johnson, Thomas J., to Celestron Pacific. Method and system for making schmidt corrector lenses. 3,837,125, Cl. 51-284.000.
Johnston, Howard, to Dow Chemical Company, The. Substituted a minohalopyridines. 3,838,159, Cl. 260-296.00r.
Johnston, Samuel A.; Lyons, John G.; and Riedmayer, Henry J., to Bunker-Ramo Corporation, The. Method of making integrated circuit package. 3,837,067, Cl. 29-613.000.
Jonas, Rochus: *See—*
Pohlke, Rolf; Jonas, Rochus; Mehrhof, Werner; Schlier, Hans-Jochen; Becker, Karl Heinz; Nowak, Herbert; and Simane, Zdenek, 3,838,147.
Jonathan, Isaac, to Hallmark Cards, Incorporated. Illuminated product display fixture. 3,838,266, Cl. 240-2.0ad.
Jones, Charles D., to Lilly, Eli, and Company. Process for preparing indoles. 3,838,167, Cl. 260-326.160.
Jones, Clifford M.; and Harnden, John D., Jr., to General Electric Company. Optical link for illuminated traveling message display sign system. 3,838,412, Cl. 340-334.000.
Jones, Giffin D., to Dow Chemical Company, The. Treatment of cellulosic materials to impart flame resistance thereto. 3,837,903, Cl. 117-138.000.
Jones, Norman R.: *See—*
Davis, Oliver Thurston; and Jones, Norman R., 3,837,013.
Jones, Robert E. Brick handling. 3,837,466, Cl. 198-30.000.
Jones, Robert N., to Xerox Corporation. Method of making a xerographic binder layer, and layer so prepared. 3,837,906, Cl. 117-201.000.
Jonsson, Bo Folke: *See—*
Lindstrom, Jan Nils; Jonsson, Bo Folke; and Ohlsson, Fall Johan Olof William, 3,837,896.
Joos, Eric, to AB Eric Joos. Support leg to be fastened in roof gutters of automobiles. 3,837,547, Cl. 224-42.10e.
Jordan, John D., to General Electric Company. Non-linear deflection drive circuit. 3,838,312, Cl. 315-27.0dt.
Joseph Bancroft & Sons Company: *See—*
Trifunovic, Alexander L.; and Hills, William H., 3,837,053.
Jourdain, Gerard Ernest Andre: *See—*
Camboulives, Andre Alphonse Mederic Leon; Chambon, Jean Francois; Jourdain, Gerard Ernest Andre; Le Maout, Theophile Francois; and Vandenbroucke, Roger Alfred Jules, 3,837,579.
Camboulives, Andre Alphonse Mederic Leon; Jourdain, Gerard Ernest Andre; and Le Maout, Theophile Francois, 3,837,580.

Juditzki, Franz, to Hoesch Aktiengesellschaft. Method of and machine for severing compound plates. 3,837,246, Cl. 83-26.000.

Juhasz, Francois: *See—*
Lemaistre, Rene; and Juhasz, Francois, 3,838,107.

Juhel, Bernard, to Compagnie des Freins et Signaux Westinghouse. Electro-pneumatic valve. 3,837,618, Cl. 251-129.000.

Julian, Ronald: *See—*
Lockwood, Charles Alfred; Goffe, Frederick William Frank; and Julian, Ronald, 3,837,025.

Juliussen, Jan Egil, to Texas Instruments Incorporated. Bubble memory organization with two port major/minor loop transfer. 3,838,407, Cl. 340-174.0tf.

Junger, Miguel C.: *See—*
Kleinschmidt, Klaus, 3,837,426.

Jureit, John Calvin; and Kushner, Benjamin Harry, to Automated Building Components, Inc. Press for repairing pallet deckboards. 3,837,557, Cl. 227-152.000.

Jutas, Titusz: *See—*
Martinko, Matyas; Martos, Ferenc; and Jutas, Titusz, 3,837,170.

Kabushiki Kaisha Akuto Giken: *See—*
Ueno, Toshio; and Konakawa, Yuzuru, 3,838,370.

Kabushiki Kaisha Morita Seisakusho: *See—*
Watanabe, Yoshiaki, 3,838,324.

Kabushiki Kaisha Seikosha: *See—*
Chida, Yoshinori; and Sawada, Naonobu, 3,837,460.

Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Teranishi Denki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Tanasawa, Yasusi; Yamada, Mitsumasa; Ito, Mikiji; and Ishiguro, Kenji, 3,837,814.

Kabushikikaisha Aichidenkikosakusho: *See—*
Yamamoto, Osamu, 3,837,075.

Kaduk, Edward E., to General Electric Company. Magnesium aluminate gallate phosphor. 3,838,060, Cl. 252-301.40p.

Kaganovsky, Gary Petrovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Kagata, Tooru, to Aisin Seiki Kabushiki Kaisha. Locking differential. 3,837,236, Cl. 74-711.000.

Kageyama, Osamu; Kai, Manabu; and Yokoo, Horosi, to Daicel Ltd. Process for purifying alkylene oxides by extractive distillation with a plural solvent mixture. 3,838,020, Cl. 203-56.000.

Kagiya, Tsutomu; and Hagiwara, Miyuki, to Japan Atomic Energy Research Institute. Process for preparing of polytetrafluoroethylene resin wax. 3,838,030, Cl. 204-159.140.

Kai, Manabu: *See—*
Kageyama, Osamu; Kai, Manabu; and Yokoo, Horosi, 3,838,020.

Kajitani, Yoshiaki; Ito, Hayami; and Mitsuda, Susumu, to Kawasaki Jukogyo Kabushiki Kaisha. Method of treating nitrogen oxide generating substances by combustion. 3,838,193, Cl. 423-351.000.

Kakimoto, Morio: *See—*
Shindo, Minoru; Kakimoto, Morio; and Nagano, Hiroyuki, 3,838,117.

Kalenda, Edward R.: *See—*
Goetz, Frederick J., Jr.; and Kalenda, Edward R., 3,837,044.

Kalwaites, Frank, to Johnson & Johnson. Method (closed sandwich with large aperture forming means and perforated backing means). 3,837,046, Cl. 19-161.00p.

Kamiji, Mamoru, to Nippondenso Co. Ltd. Capacitor discharge ignition system. 3,837,326, Cl. 123-148.00e.

Kamin, George J.: *See—*
Behringer, Cecil; and Kamin, George J., 3,837,880.

Kaminow, Ivan Paul: *See—*
Carruthers, John Robert; and Kaminow, Ivan Paul, 3,837,827.

Kammerling, Walter: *See—*
Allen, Nigel Stafford David; and Kammerling, Walter, 3,837,716.

Kanaya, Motonori: *See—*
Suzuki, Masane; Kanaya, Motonori; and Seki, Kazuhisa, 3,837,726.

Kanbe, Masaru: *See—*
Sakazume Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; and Kanbe, Masaru, 3,837,863.

Kanij, Johannes B. W.; Noothout, Arend J.; and Hermans, Marie E. A., to Reactor Centrum Nederland. Method for the preparation of concentrated anion-deficient salt solutions. 3,838,062, Cl. 252-301.10r.

Kanki, Hiroshi; Suzuki, Torao; and Kurita, Kazuyoshi, to Takeda Chemical Industries Ltd. Device for the transport and filling of ampoules. 3,837,378, Cl. 141-146.000.

Kanno, Isawo; Takashima, Toshiyuki; and Bokuda, Yoshiyuki, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Laminated safety glass and interlayer therefor. 3,838,091, Cl. 260-31.20r.

Kaplan, Herbert E. Extension arrangement for glass top tables. 3,837,297, Cl. 108-69.000.

Kaposhilin, George N.: *See—*
Marion, Andre F.; and Kaposhilin, George N., 3,838,291.

Karmas, George, to Ortho Pharmaceutical Corporation. Aryl substituted-hydroxy substituted cyclohexanecarboxylic acids. 3,838,172, Cl. 260-345.700.

Karr, Willis F., to Sparton Corporation. Coin receptacle vault. 3,837,300, Cl. 109-57.000.

Kasper, George P.: *See—*
Trachtenberg, William; McCabe, John M.; and Kasper, George P., 3,838,054.

Kasper, Joseph G., to Tennant Company. Scrubbing machine. 3,837,029, Cl. 15-50.00c.

Kato, Kazuo: *See—*
Sugiura, Mamoru; Kitamikado, Tadashi; and Kato, Kazuo, 3,838,150.

Kato, Saburo; and Hokari, Saburo. Audio-visual apparatus including magnetic sheet mounting and hold-down means. 3,837,738, Cl. 353-23.000.

Kato, Yoshihiko: *See—*
Masuda, Maosuke; Abe, Toshihiro; and Kato, Yoshihiko, 3,837,713.

Katsevich, Leonid Savvich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Katzakian, Arthur, Jr.: *See—*
Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Hamel, Edward E., 3,838,101.

Kaufman, Arnold S.: *See—*
Sweet, Albert; and Kaufman, Arnold S., 3,837,269.

Kawaguchi, Tadao: *See—*
Hegi, Nobumitsu; Kitamura, Takeshi; Saida, Seishiro; and Kawaguchi, Tadao, 3,837,636.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Kajitani, Yoshiaki; Ito, Hayami; and Mitsuda, Susumu, 3,838,193.

Kawashiro, Yasukazu, to Denki Kogyo Company Limited. Winch utilizing an axle of an automobile. 3,837,418, Cl. 180-53.0va.

Kawatake, Koichi: *See—*
Hirasawa, Kotaro; Kawatake, Koichi; and Iwasaka, Tatsuo, 3,837,436.

Kawawa, Eiji, to Nihon Klingage Co., Ltd. Sight glass assembly and a method of producing the same. 3,837,226, Cl. 73-331.000.

Kay, Thomas William Lawrie: *See—*
Sellers, Brian; Usher, Harry Graham; and Kay, Thomas William Lawrie, 3,837,021.

Kaye, Irving I.: *See—*
Flanagan, Thomas P.; and Kaye, Irving I., 3,837,994.

Keating, John T.: *See—*
Zalewski, Edmund J.; Simonian, John L.; and Keating, John T., 3,838,088.

Keen, John Raymond: *See—*
Dean, Michael Gordon Ellis; Keen, John Raymond; and Edgington, Geoffrey, 3,838,281.

Keene Corporation: *See—*
Fabbri, William C., 3,838,268.

Kehl, William L.; and Rennard, Raymond J., Jr., to Gulf Research & Development Company. Hydrolysis of aryl halides with metal phosphates. 3,838,182, Cl. 260-629.000.

Keller, Manfred; and Hoffmann, Jochen, to Daimler-Benz Aktiengesellschaft. Mechanism for limiting deflection of a door. 3,837,040, Cl. 16-85.000.

Kelly, John D.: *See—*
Ishimitsu, Kichio; Kelly, John D.; Miller, Douglas S.; and Taylor, Gordon A., 3,838,425.

Kelsey-Hayes Company: *See—*
Davies, Arthur S., 3,837,558.
Hollnagel, Harold S., 3,837,438.

Kemlite Corporation: *See—*
Morse, Donald B.; and Pribish, Bernard A., 3,837,247.

Kendall Company, The: *See—*
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Chesky, Sheldon R.; Patience, Donald; and Hartigan, Edward G., 3,837,338.
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Kennametal Inc.: *See—*
Barkley, George G.; Sorice, Edward L.; and Niebauer, Kenneth L., 3,837,058.

Kennedy, Anthony W.: *See—*
Koboldt, Melvin A., 3,837,523.

Kennedy, John J.: *See—*
Doubek, Edward R., Jr.; Kennedy, John J.; and Sandmore, Donald K., 3,838,274.

Kenney, Edward J.: *See—*
Smith, Frank R., Jr.; Di Salvo, Walter A.; and Kenney, Edward J., 3,838,072.

Kent, Eric George, to Polymer Corporation Limited. Moldable compositions based on trans-1,4 polymers of isoprene. 3,838,098, Cl. 260-41.50r.

Kernforschungsanlage Julich GmbH: *See—*
Gyarmati, Erno; and Nickel, Hubertus, 3,838,184.

Kesling, Peter C. Preformed tooth positioning and retaining appliance. 3,837,081, Cl. 32-14.00b.

Kestigian, Michael, to Sperry Rand Corporation. Method of growing rare earth garnet material. 3,838,053, Cl. 252-62.570.

Kewanee Oil Company: *See—*
Swinehart, Carl F.; and Lindow, James T., 3,837,882.
Vogt, John W.; and Owen, James E., 3,838,064.
Vogt, John W.; and Owen, James E., 3,838,092.

Keystone Consolidated Industries, Inc.: *See—*
Coe, William H., 3,837,043.
Rhoades, Nolan K., 3,837,611.

Khoury, Khalil Ibrahim, to Flann Microwave Instruments Limited. Frequency measurements. 3,838,338, Cl. 324-790.000.

Kihnke, Lee S., to Dake Corporation. Product orienting apparatus for packaging. 3,837,469, Cl. 198-106.000.

Kilroy, Oliver B. Hydraulic mining system. 3,837,707, Cl. 299-8.000.

Kimberly-Clark Corporation: *See—*
Braun, Ralph V.; and Knauer, Audrey J., 3,837,996.
Chung, Raymond, 3,837,999.
Evans, Ernest C., 3,837,991.
Floden, John G., 3,837,995.
Mandich, Ronald P.; and Middleton, David L., 3,837,975.

Kimzey, Paul W.; Olson, Donald L.; Delmore, Daniel A.; and Krier, Keith N., to Tennant Company. Apparatus for cleaning surfaces. 3,837,038, Cl. 15-349.000.

Kinematics and Controls Corporation: *See—*
Rakucewicz, John J., 3,837,528.

King, Edward J., Jr.; Ganther, Kenneth R., Jr.; and Grillot, Ronald Eugene, to King Radio Corporation. Method and apparatus for digitally indicating direct present position. 3,838,427, Cl. 343-106.00r.

King Radio Corporation: *See—*
King, Edward J., Jr.; Ganther, Kenneth R., Jr.; and Grillot, Ronald Eugene, 3,838,427.

Kipple, Harry P.; and Cozzarin, Virgil J., to Westinghouse Electric Corporation. Air bearing. 3,837,717, Cl. 308-9.000.

Kirimoto, Kazusuke: *See—*
Ukihashi, Hiroshi; Kirimoto, Kazusuke; and Kojima, Hiroaki, 3,838,083.

Kirin Beer Kabushiki Kaisha: *See—*
Yatsushiro, Toyohiko; Takashima, Tsuyoshi; Iwasaki, Takashi; and Okamura, Susumu, 3,837,137.

Kirk, Hugh A.,: *See—*
Hilyard, Gail D., 3,837,670.

Kirkhof Manufacturing Corporation: *See—*
Medendorp, Roger L., 3,837,526.

Kish, George D., to Dresser Industries, Inc. Electrically conductive pipe coupling gasket. 3,838,205, Cl. 174-84.00s.

Kitagawa, Yukio: *See—*
Makita, Mutsuo; Hayakawa, Wataru; Hayashi, Masaaki; and Kitagawa, Yukio, 3,837,844.

Kitamikado, Tadashi: *See—*
Sugiura, Mamoru; Kitamikado, Tadashi; and Kato, Kazuo, 3,838,150.

Kitamura, Takeshi: *See—*
Hegi, Nobumitsu; Kitamura, Takeshi; Saida, Seishiro; and Kawaguchi, Tadao, 3,837,636.

Kitashima, Nobuo: *See—*
Masaki, Tatsuo; Hanada, Hiroshi; and Kitashima, Nobuo, 3,837,853.

Kittle, Paul A.: *See—*
Crook, Evan H.; and Kittle, Paul A., 3,838,043.

Klatt, Alfred: *See—*
Reinecke, Erich; Klatt, Alfred; Weise, Lutz; and Maisold, Karl-Heinz, 3,837,710.

Klein, Fritz S.; and Yinon, Jehuda. Amplifier and quadrupole mass spectrometer utilizing same. 3,838,280, Cl. 250-292.000.

Klein, Samuel J., to American Technical Ceramics; a division of Phase, Industries, Inc. Multiple layer capacitors. 3,838,320, Cl. 317-261.000.

Kleinschmidt, Klaus, to Junger, Miguel C. Sound absorbing structural block. 3,837,426, Cl. 171-33.00g.

Klimovsky, Lev Lvovich: *See—*
Dakhov, Mark Illarionovich; Nesterov, Pavel Petrovich; Semkin, Alexei Trofimovich; Alexeeva, Ljudmila Andreevna; Sakhnovsky, Arkady Zinovievich; Skrypnik, Ivan Timofeevich; Klimovsky, Lev Lvovich; and Miroshnichenko, Viktor Alexandrovich, 3,837,152.

Klinger, Kurt: *See—*
Ploch, Siegfrid; Klinger, Kurt; and Reif, Joachim, 3,837,943.

Klockner-Humboldt-Deutz AG: *See—*
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Decker, Hanns; and Hurtmanns, Heinz, 3,837,430.
Decker, Hanns; and Hurtmanns, Heinz, 3,837,585.

Klopfenstein, King L.: *See—*
Connors, Robert H.; and Klopfenstein, King L., 3,837,415.

Klusmier, Kenneth L., to Morgan Construction Company. Material handling apparatus. 3,837,453, Cl. 193-40.000.

Klusmier, Kenneth L.; and Hill, William J., to Morgan Construction Company. Assembly and transfer apparatus. 3,837,465, Cl. 198-27.000.

Knapp, Edward J., Jr. Chase-Shawmut Company, The Low current-carrying capacity time lag fuse. 3,838,374, Cl. 337-163.000.

Knapsack Aktiengesellschaft: *See—*
Gehrmann, Klaus; Erpenbach, Heinz; Handte, Heinz; and Bredtmann, Manfred, 3,838,018.

Knauer, Audrey J.: *See—*
Braun, Ralph V.; and Knauer, Audrey J., 3,837,996.

Knavish, Leonard A.: *See—*
Pecoraro, George A.; McConnell, John F.; and Knavish, Leonard A., 3,837,832.

Knerr, Reinhard Heinrich; and Swan, Clarence Burke, to Bell Telephone Laboratories, Incorporated. Parallel connected diode device with suppression of asymmetric modes. 3,838,356, Cl. 331-56.000.

Knight, Thomas C.: *See—*
Long, Larry K.; Knight, Thomas C.; and Jackson, William F., 3,837,635.

Knogo Corporation: *See—*
Minasy, Arthur J.; and Pruzick, Ronald, 3,838,409.

Ko, Kenneth. Dust collector and safety guard. 3,837,383, Cl. 144-251.00a.

Kobayashi, Katsumi; Takeda, Reiji; and Sato, Kimiaki, to Nippon Tensai Seito Kabushiki Kaisha. Apparatus for producing paper cylinders for nursing seedlings. 3,837,263, Cl. 93-1.00h.

Kobayashi, Kengo; and Manabe, Mitsuo. Motor speed acceleration-deceleration control circuit. 3,838,325, Cl. 318-415.000.

Kobayashi, Sanzo. Case having magnetic lock means. 3,837,525, Cl. 220-55.00k.

Kobayashi, Shigehiko: *See—*
Miyazaki, Kazuhide; Yamamoto, Michiaki; Kobayashi, Shigehiko; and Sakai, Toshiyuki, 3,838,069.

Kobayashi, Yoshikazu: *See—*
Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, 3,838,378.

Kobayashi, Yoshiyuki: *See—*
Hikai, Akio; Kobayashi, Yoshiyuki; and Furuta, Kazuyoshi, 3,837,606.

Kobelt, Jack R. Vehicle disk brake. 3,837,420, Cl. 188-71.600.

Koblitz, Werner: *See—*
Meyerhuber, Wittich; Koblitz, Werner; and Suppe, Hansjoachim, 3,837,184.

Koboldt, Melvin A.; deceased (by Koboldt, Norma L.; executrix; Ruf, Ellsworth J.; and Kennedy, Anthony W.), to Container Corporation of America. Beaded closure for containers. 3,837,523, Cl. 220-27.000.

Koboldt, Norma L.: *See—*
Koboldt, Melvin A., 3,837,523.

Koch, Reinhard, to Elektro-Plating Patent Holding S.A. Acidic zinc electroplating bath. 3,838,026, Cl. 204-55.00r.

Kockum Industries, Inc.: *See—*
Gaitten, Walden M., 3,837,382.

Kohl, Helmut; Forhauser, Siegfried; Mantell, Detmar; Granitzki, Karl-Ernst; Hess, Heinrich; and Schiefer, Paul, to Rheinstahl AG. Method of lining metallurgical furnaces and a lining material. 3,837,630, Cl. 266-43.000.

Kohl, Karl. Thread guides having restricted apertures for use in warp knitting machines. 3,837,183, Cl. 66-86.00r.

Kohlert, Gerhard: *See—*
Becker, Horst; and Kohlert, Gerhard, 3,837,846.

Koito Industries Ltd.: *See—*
Hiraoka, Kingo, 3,837,166.

Kojima, Hiroaki: *See—*
Hayashi, Takao; and Kojima, Hiroaki, 3,838,104.
Ukihashi, Hiroshi; Kirimoto, Kazusuke; and Kojima, Hiroaki, 3,838,083.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Nosaka, Kunishi (said Nosaka assor. to), 3,838,221.

Kolakowski, Richard A.; Grieve, Robin L.; and Tilgner, Peter, to Upjohn Company, The. Apparatus for producing foamed resin-care web-faced laminates in continuous length. 3,837,771, Cl. 425-110.000.

Koller, Eugen Johann: *See—*
Litzler, Alfred; Liechti, Hans Wilhelm; Guye-Vuilleme, Jean-Frederic; Koller, Eugen Johann; Milicevic, Branimir; and Angliker, Hans-Joerg, 3,837,802.

Komatsu, Toshiro, to Ishikawajma-Harime Jukogyo Kabushiki Kaisha. Hoisting device for use with cranes. 3,837,503, Cl. 212-83.000.

Konakawa, Yuzuru: *See—*
Ueno, Toshio; and Konakawa, Yuzuru, 3,838,370.

Konig, Rudolf: *See—*
Haase, Ernst-Gunter; and Konig, Rudolf, 3,837,695.

Koninklijke Nederlandsche Hoogovens en Staal-Fabrieken N.V.: *See—*
Lucieer, Wouter Bram; and Van Amerongen, Theodorus Antonius Maria, 3,837,793.

Konishi, Tatsuo: *See—*
Otsuka, Hiroaki; Manabe, Norihisa; and Konishi, Tatsuo, 3,838,446.

Konishiroku Photo Industry Co., Ltd.: *See—*
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Sakazume Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; and Kanbe, Masaru, 3,837,863.

Konrad Doppelmayr & Sohn, Firma: *See*—
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Koracorp Industries, Inc., mesne: *See*—
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Kores Holding Zug AG: *See*—
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Korner, Wilhelm: *See*—
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Kornsey, Robert J.: *See*—
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Korpics, Frank Joseph: *See*—
Neumann, Otto Walter; and Korpics, Frank Joseph, 3,837,293.

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Chartrain, Armand N.; and Newell, Carl W., 3,838,386.

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Koy, Johannes: *See*—
Stolz, Heinz; and Koy, Johannes, 3,838,288.

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Asakura, Hiroshi; Sakai, Keisuke; Koyama, Masaru; and Mizuguchi, Hironori, 3,837,973.

Kraft, Wolfgang, to ITT Industries, Inc. Planar diffusion method. 3,837,936, Cl. 148-187.000.

Krag, Niels, to Electronic Memories and Magnetics Corporation. Method for producing compact magnetic core arrays. 3,837,951, Cl. 156-85.000.

Kralowetz, Bruno. Process and machine for swaging rectangular-section workpieces. 3,837,210, Cl. 72-403.000.

Kresta, Erich: *See*—
Gorter, Werner; Kresta, Erich; and Stumpf, Horst, 3,837,986.

Krier, Keith N.: *See*—
Kimzey, Paul W.; Olson, Donald L.; Delmore, Daniel A.; and Krier, Keith N., 3,837,038.

Kronig, Walter: *See*—
Schwerdtel, Wulf; Kronig, Walter; Scharfe, Gerhard; and Swodenk, Wolfgang, 3,838,019.

Kronos Titan-G.m.b.H.: *See*—
Kugelberg, Joachim; Servais, Carlo; and Uihlein, Rolf Dieter, 3,837,583.

Krulla, Wilfried: *See*—
Weinrotter, Fredinand; Muller, Walter; Krulla, Wilfried; and Stern, Gerhard, 3,837,835.

Krupp, Fried., Gesellschaft mit beschrankter Haftung: *See*—
Buddruss, Claus-Peter; Conjaeger, Arnim; and Triebold, Karl-Friedrich, 3,838,389.

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Kubiak, John W., to Torit Corporation, The. Filtering apparatus with pneumatic intermittent cleaning. 3,837,150, Cl. 55-272.000.

Kuchuris, Louis G.; and Gembicki, Stanley, to Cutting Equipment Leasing, Inc. Expanded polystyrene partition structure and method of making thereof. 3,837,560, Cl. 229-15.000.

Kudirka, Alvydas A.: *See*—
Gluntz, Douglas M.; Fitzsimmons, George W., Jr.; Wolf, Siegbert; and Kudirka, Alvydas A., 3,838,002.

Kugelberg, Joachim; Servais, Carlo; and Uihlein, Rolf Dieter, to Kronos Titan-G.m.b.H. Multi-stage jet mill. 3,837,583, Cl. 241-39.000.

Kukin, Ira, to Apollo Chemical Corporation. Combustion control by additives introduced in both hot and cold zones. 3,837,820, Cl. 44-5.000.

Kulhavy, Joseph T., to Case, J. I. Company. Drive line damper. 3,837,182, Cl. 64-26.000.

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Nemoto, Tadashi; Kuniya, Keiichi; and Tamamura, Takeo, 3,837,931.

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Kurita, Kazuyoshi: *See*—
Kanki, Hiroshi; Suzuki, Torao; and Kurita, Kazuyoshi, 3,837,378.

Kuroiwa, Katsumasa: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Narita, Kouichi; Hashimoto, Reiko; and Tamaki, Kohji, 3,838,096.

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Kushner, Benjamin Harry: *See*—
Jureit, John Calvin; and Kushner, Benjamin Harry, 3,837,557.

Kusilek, Leroy I.: *See*—
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Walker, Bernard F.; and Kusterer, James E., Jr., 3,837,804.

Kutik, Louis F.; and Swier, Raymond R. Reinforced aerosol container. 3,837,527, Cl. 220-72.000.

Kutscher, Horst, to Vacmetal Gesellschaft fur Vakuum-Metallurgie mbH. Process for controlled removal of carbon under vacuum from high alloyed steels. 3,837,841, Cl. 75-49.000.

Kuttruff, Gary W.; and Durham, Raymond F., to Carrier Corporation. Accumulator with refrigerant level indicating means. 3,837,173, Cl. 62-128.000.

Kuwagaki, Akira; and Takenaka, Sadao, to Nippon Cloth Industry Co. Ltd. Solid puzzle. 3,837,652, Cl. 273-157.000.

Kuxmann KG.: *See*—
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Kyllonen, Allen W.: *See*—
Clemmons, Quentin T.; Coiner, Ronald W.; Jeffrey, William B.; and Kyllonen, Allen W., 3,837,443.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Fukumoto, Jyuichiro; Yamamoto, Takehiko; and Tsuru, Daisuke, 3,838,009.

La Grone, Clyde W.: *See*—
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La Societe dite CLISALU: *See*—
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Laar, Tiborne: *See*—
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Lacey, Raymond Dennis: *See*—
Davis, Alan Russell; Lacey, Raymond Dennis; and Gray, John Meredith, 3,837,208.

Lafayette Brass Manufacturing Co., Inc.: *See*—
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Lagergren, Richard Edward, to International Business Machines Corporation. Self-threading take-up spool device. 3,837,596, Cl. 242-74.000.

LaHaye, Paul G.: *See*—
Craig, Glenn D.; Feuling, David T.; and LaHaye, Paul G., 3,837,788.

Laighton, David G., to Westinghouse Electric Corporation. Microwave power transistor chip carrier. 3,838,443, Cl. 357-84.000.

Laing, Graham Sterling: *See*—
Morrell, Ronald Joseph; Gumb, Bev William; Laing, Graham Sterling; and Cogan, Frederick Thomas, 3,838,229.

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L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Buffiere, Jean-Pierre; and Grenier, Maurice, 3,837,821.

Lake Chemical Company: *See*—
Aronberg, Lester, 3,837,932.

Lambert, Alain: *See*—
Flambard, Christian; and Lambert, Alain, 3,837,218.

Lambert, Robert R., to Wehr Corporation, mesne. Adapter means for coupling a prepositioned air plenum chamber to a later positioned air bar. 3,837,267, Cl. 98-40.0dl.

Lamberton, Bruce A. Reinforced mattress for protecting shorelines and the like. 3,837,169, Cl. 61-38.000.

Lambertus, Friedrich, to Werner & Pfleiderer. Device for cooling and granulating strands of plastic material discharged from an extruder. 3,837,781, Cl. 425-308.000.

Lamm, Bo Robert: *See*—
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Lamoria, Lz F.: *See*—
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Lane, William A.: *See*—
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Lang, George R.: *See*—
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Langanke, Helmut; Landenberger, Peter; and Treutel, Georg, to Metallgesellschaft Aktiengesellschaft. Process for producing molecularly oriented, textured continuous filaments. 3,837,156, Cl. 57-157.0ts.

Langsam, Michael, to Air Products and Chemicals, Inc. Short cycle, thermally stable vinyl chloride-propylene copolymers. 3,838,138, Cl. 260-87.50c.

Lanigan, Richard W.; and Szymber, Oleg, to American Hospital Supply Corporation. Heat-retaining server. 3,837,330, Cl. 126-246.000.

Larson, Richard T.: *See*—
Fraser, Harvey R., Jr.; Larson, Richard T.; and Rinkleib, Helfried O., 3,837,690.

Larsonneur, Louis C., to Nalco Chemical Company. Hot rolling mill lubrication apparatus and process. 3,837,199, Cl. 72-21.000.

Laseman, Blanche E. Sportsman's tent. 3,837,006, Cl. 2-89.000.

Lasher, Richard W.: *See*—
Myers, John L.; Lasher, Richard W.; and James, Russell D., 3,838,085.

Latash, Jury Vadimovich: *See*—

Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Continuous mass styrene-type monomer polymerization process. 3,838,139, Cl. 260-88.20c.

Latinen, May V.: *See—*
Latinen, George A., 3,838,139.

Lauffer, Hermann, to Zellweger AG. Apparatus for transforming a deteriorated input signal into a binary signal. 3,838,347, Cl. 328-164.000.

Lauridsen, Walter E.: *See—*
Anderson, A. D.; Lauridsen, Walter E.; and Overstreet, Charles L., 3,837,699.

Laval, Claude, to Lebocey Industrie. Shuttle positioning device. 3,837,367, Cl. 139-155.000.

LaViolette, Paul Alex. Self-contained closed circuit breathing apparatus. 3,837,337, Cl. 128-142.200.

Lawrence, John P., to Goodyear Tire & Rubber Company, The. Imide additives for sulfur vulcanizable polymers. 3,838,114, Cl. 260-79.50a.

Lawter Chemicals, Inc.: *See—*
Foss, Theodore H., 3,838,063.

Lay, Frank M.: *See—*
Haberland, Peter H.; Lay, Frank M.; Murphy, Thomas J.; Skolnik, Marvin B.; Spencer, Oliver S.; Wagner, Peter R.; Whitaker, Howard L.; and Wilson, Donald M., 3,837,724.

Le Maout, Theophile Francois: *See—*
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Camboulives, Andre Alphonse Mederic Leon; Jourdain, Gerard Ernest Andre; and Le Maout, Theophile Francois, 3,837,580.

Le-Merer, Jean Pierre: *See—*
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Lea, James F., Jr., to Sun Oil Company (Deleware). Apparatus for melting ice. 3,837,311, Cl. 114-.50d.

Leach, John Michael, to Pfizer Inc. Purification of Australia antigen by vitracentrifugation. 3,838,144, Cl. 260-112.00r.

Leader, Joe. Grass catcher for rotary mower. 3,837,158, Cl. 56-202.000.

Lear Motor Corporation: *See—*
Greenwell, Jack E., 3,838,322.

Lebedev, Vladimir Konstantinovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Lebel, Pierre, to France-Couleur. Method of manufacture for cathode-ray tubes for color television receivers. 3,837,829, Cl. 65-59.000.

LeBlanc, John R., to Monsanto Company. Process for improving the yield of clay and drilling muds prepared therefrom. 3,838,047, Cl. 252-8.50a.

Lebocey Industrie: *See—*
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Lech, Richard J.: *See—*
Nelson, Vaughn A.; Fadden, Donald K.; and Lech, Richard J., 3,837,359.

Ledochowski, Andrzej; and Stefanska, Barbara, to Starogardzkie Zaklady Farmaceutyczne 'Polfa'. N-10-Oxides of 1-nitro-9-[dialkylaminoalkylamino] acridine. 3,838,130, Cl. 260-279.00a.

Lee, Alan Stuart, to English Electric Company Limited, The. Pumps. 3,837,762, Cl. 415-207.000.

Lee, David Q.; and McLaughlin, Donald W., to GTE Automatic Electric Laboratories Incorporated. Ring trip and dial pulse detection circuit. 3,838,223, Cl. 179-18.0fa.

Lee, David Q.; and McLaughlin, Donald W., to GTE Automatic Electric Laboratories Incorporated. Junctor disconnect detection circuit. 3,838,228, Cl. 179-18.00h.

Lee, Jay H. Jumpolene game. 3,837,643, Cl. 272-65.000.

Lee, Raymond, Organization, Inc., The: *See—*
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Curtis, George B.; and Curtis, Betty L., 3,837,701.
Johnson, Hattie, 3,837,334.
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Leeds & Northrup Company: *See—*
Ross, Charles W., 3,838,257.

Leeford (London) Limited: *See—*
Liebrecht, Heinrich Fritz, 3,837,030.

Leete, Bernard D., to General Electric Company. Monitor for repetitive pulse forming circuit. 3,838,294, Cl. 307-233.000.

Lefebvre, Michel S. M.; and Hennion, Jean-Claude M. L., to Omnium de Prospective Industrielle. Apparatus for the continuous treatment of threads. 3,837,186, Cl. 68-3.0ss.

Leffert, S. Douglas: *See—*
Leffert, Willis M.; and Leffert, S. Douglas, 3,837,034.

Leffert, Willis M.; and Leffert, S. Douglas. Painter's caddy. 3,837,034, Cl. 15-257.060.

Legatti, Raymond H. Direct reading wattmeter for measuring the true watts power consumption of an A.C. Circuit. 3,838,340, Cl. 324-142.000.

Lehe, Russell B. Slatted floor system. 3,837,319, Cl. 119-28.000.

Lehmann, Myrtil B., to Chanel, Inc. Means for fixing an object in its packaging container. 3,837,479, Cl. 206-489.000.

Lehnert, Andrew B., to Upjohn Company, The. Spray gun. 3,837,575, Cl. 239-112.000.

Lehr, Heinz; and Swarat, Walter, to Condux-Werk Herbert A. Merges KG. Apparatus for granulating thermoplastic strands. 3,837,584, Cl. 241-65.000.

Leibach, Heinrich, to Motoren- und Turbinen-Union Munchen GmbH. Turbojet engines with pivoting jet pipe and thrust reversing means. 3,837,578, Cl. 239-265.350.

Leibenzon, Semen Abramovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Lejeune, Daniel, to Compagnie General des Etablissement Michelin raison Sociale Michelin & Cie. Anti skid stud for tires. 3,837,386, Cl. 152-210.000.

L'Electro-Refractaire: *See—*
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Lemaistre, Rene; and Juhasz, Francois, to Rhone-Progil. Method of preparing crystallized polyesters. 3,838,107, Cl. 260-75.00t.

Lemieux, George: *See—*
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Lemons, Kyle E.: *See—*
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Lenz, Lowell J. Sequence batch dryer. 3,837,088, Cl. 34-54.000.

Leonard, George Hamlin. Coupling for tubing. 3,837,687, Cl. 285-111.000.

Leonhart, Xaver. Levelling assembly for warpable playing surfaces. 3,837,298, Cl. 108-161.000.

Lepley, James W.; and Stoltzfus, John E., to Flying Dutchman, Inc. Adjustable bottom discharge for silo. 3,837,507, Cl. 214-17.00d.

Lesher, George Y.: *See—*
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Lesnansky, Michael, Jr., to Textron, Inc. Multiple retention plug for sealing openings in metal parts. 3,837,522, Cl. 220-24.500.

Letang, Roland: *See—*
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Leuenberger, Arthur-Andre, to Relma S.A. Rotary coupling device in which the transmitted speed of rotation is increased progressively. 3,837,181, Cl. 64-26.000.

Lever Brothers Company: *See—*
Barnes, Andrew Nicholas Morrison; Chen, Wai Ming; Rickards, Tudor; Rosser, David Arthur; and Thurairajan, Ponnuswamy, 3,838,057.

Levine, Aaron J. Drill press. 3,837,757, Cl. 408-14.000.

Levinstein, Hyman Joseph: *See—*
Bobeck, Andrew Henry; Levinstein, Hyman Joseph; and Shick, Larry Keith, 3,837,911.

Levy, Samuel, to General Electric Company. Roller conveying of strip material. 3,837,550, Cl. 226-4.000.

Lewer, Hans: *See—*
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Lewer, Hans, to Chemische Fabrik Kalk GmbH. Tamping cartridge made of filled, elongated polymeric tubing. 3,837,280, Cl. 102-30.000.

Lewicki, George W.; and Guisinger, John E., to California Institute of Technology. Manganese bismuth films with narrow transfer characteristics for curie-point switching. 3,837,908, Cl. 117-239.000.

Lewis, Dean F.; and Pinney, Verne D. Post strap fitting. 3,837,048, Cl. 24-201.00a.

Lewis, Gerald F. Seat belt retractor apparatus. 3,837,594, Cl. 242-107.400.

Lewis, John D. Separation of acetylene from ethylene-bearing gases. 3,837,144, Cl. 55-64.000.

Lhoas, Pol Joseph Ghislain, to Beecham Group Limited. Processes for the cultivation of fungi. 3,838,003, Cl. 195-1.100.

Liang, Charles C.; and Schlaikjer, Carl R., to Mallory, P. R., & Co., Inc. Battery containing a solid electrolyte having cationic defects. 3,837,920, Cl. 136-83.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
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Lichtenberg, Alfred, to Siemens Aktiengesellschaft. Magnetic suspension utilizing an elongated coil. 3,837,287, Cl. 104-148.0ss.

Liebrecht, Heinrich Fritz, to Leeford (London) Limited. Ground treating apparatus. 3,837,030, Cl. 15-82.000.

Liechti, Hans Wilhelm: *See—*
Litzler, Alfred; Liechti, Hans Wilhelm; Guye-Vuilleme, Jean-Frederic; Koller, Eugen Johann; Milicevic, Branimir; and Angliker, Hans-Joerg, 3,837,802.

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Jones, Charles D., 3,838,167.

Limberg, Anthony; Wedmore, William R.; Ellyn, Glen; and Young, John S., to GTE Automatic Electric Laboratories Incorporated. TSPS key scanner. 3,838,225, Cl. 179-27.0ff.

Lin, Ye-Shih. Sewage treatment apparatus. 3,837,493, Cl. 210-197.000.

Lind, Kurt Bertil Reinhold, to Telefonaktiebolaget LM Ericsson. Synchronization method and an arrangement for recovery of binary signals. 3,838,214, Cl. 178-69.50r.

Lindberg, Leo H.: *See—*
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Lindell, Edward, to Lockheed Electronics Company, Inc. Ratioless MOS sense amplifier. 3,838,295, Cl. 307-238.000.

Lindner, Ernst: *See—*
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Lindow, James T.: *See—*
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Lindstrom, Jan Nils; Jonsson, Bo Folke; and Ohlsson, Fall Johan Olof William, to Sandvik Aktiebolag (a/k/a Sandvikens Jernverks Aktiebolag). Sintered cemented carbide body coated with two layers. 3,837,896, Cl. 117-70.00a.

Links, Heinz, to Bosch, Robert, G.m.b.H. Fuel injection system for internal combustion engines. 3,837,324, Cl. 123-139.00e.

Linsley, John W., Jr.: *See—*
Brown, Donald R.; Linsley, John W., Jr.; and Porod, Robert F., 3,838,316.

Lippert, Werner; Bernt, Erich; Gruber, Wolfgang; and Bergmeyer, Hans Ulrich, to Boehringer Mannheim GmbH. Standard solution of glycerol. 3,838,065, Cl. 252-408.000.

Lith-Kem Corporation: *See—*
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Martin, Peter G., 3,838,396.

Little, William E., to Case, J. I., Company. Control means for fluid translating device. 3,837,417, Cl. 180-6.480.

Litzler, Alfred; Liechti, Hans Wilhelm; Guye-Vuilleme, Jean-Frederic; Koller, Eugen Johann; Milicevic, Branimir; and Angliker, Hans-Joerg, to Ciba-Geigy AG. Process for dyeing. 3,837,802, Cl. 8-173.000.

Lloyd, Neil E.; and Mather, Walter B., III, to Celanese Corporation. Pneumatic false twist interlaced yarn. 3,837,155, Cl. 57-140.00r.

Lockheed Electronics Company, Inc.: *See—*
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Lockwood, Charles Alfred; Goffe, Frederick William Frank; and Julian, Ronald, to Shoe and Allied Trades Research Association, The. Shoe making. 3,837,025, Cl. 12-54.100.

Lockwood, John E.: *See—*
Lockwood, John E.; Spair, Herbert S.; and Spair, Richard A., Sr. (said Spair, Richard A., Sr., assor. of 6 2/3% to said), 3,838,392.

Lockwood, John E.; Spair, Herbert S.; and Spair, Richard A., Sr., said Spair, Richard A., Sr., assor. of 6 2/3% to said Lockwood, John E. and said Spair, Richard A., Sr., assor. of 26 2/3% to said Spair, Herbert S. Audible warning system for school buses. ,838,392, Cl. 340-75.000.

Loctite Corporation: *See—*
Frauenglass, Elliott; and Murray, Bruce D., 3,837,963.

Lofstrom, Dennis E.; Churchill, William A.; and Thul, Richard L., said Thul and said Churchill. Data card holder. 3,837,106, Cl. 40-104.030.

Logan, David J., to Gerber Scientific Instrument Company, The. Step motor control system. 3,838,258, Cl. 235-151.110.

Logan, Ralph Andre; McFee, James Hoffman; Nahory, Robert Edward; Pollack, Martin Alan; and 400852, to Bell Telephone Laboratories, Incorporated. Injected carrier guided wave deflector. 3,837,728, Cl. 350-96.wg0.

Logothetis, Anestis L.: *See—*
Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., 3,838,081.

Long, Larry K.; Knight, Thomas C.; and Jackson, William F., to Amerco, Inc. Medical examining chair. 3,837,635, Cl. 269-325.000.

Long Manufacturing Co., inc.: *See—*
Atkinson, Wallace E., 3,837,189.

Long, Marshall; Alley, Lewis F.; and Reynolds, William A., to Marlen Research Corporation. Machine for severing meat slabs. 3,837,249, Cl. 83-408.000.

Long, Olan L.: *See—*
Hanks, Jack G.; and Long, Olan L., 3,837,120.

Loomis, Russell M., to Unarco Industries, Inc. Safety latch pin for bulkheads. 3,837,296, Cl. 105-376.000.

Loov, Nils Gusta, to Looveverken Raufoss AB. Wedge member. 3,837,625, Cl. 254-104.000.

Looveverken Raufoss AB: *See—*
Loov, Nils Gusta, 3,837,625.

Lopez, Pedro. Key-operated locks. 3,837,197, Cl. 70-364.00a.

Lord Corporation: *See—*
Owston, William J., 3,838,093.

Lord, Harry C.: *See—*
Egan, Dale W.; Holstrom, Geoffrey B.; and Lord, Harry C., 3,837,744.

Lorieux, Rene, to La Societe dite CLISALU. Device for transfer and positioning sealing capsules for feeding a bottle capping machine. 3,837,141, Cl. 53-307.000.

Losell, Ernst Ingvar, to AB Emmaboda Glasverk. Multiple glazing unit. 3,837,129, Cl. 52-309.000.

Loughlin, Bernard D.; and Page, Charles E., to Hazeltine Research, Inc. System for transmitting auxiliary information in low energy density portion of color TV spectrum. 3,838,444, Cl. 358-12.000.

Lovell, Lyle M., to Standard Oil Company. Method for stabilizing pyrophoric materials in a catalyst bed. 3,838,066, Cl. 252-419.000.

Loxley, Ted A.; Barber, Walter G.; Combs, Walter W.; and Webb, John M., to Sherwood Refractories, Inc. Process for making transparent silica glass. 3,837,825, Cl. 65-18.000.

Lubrastart International: *See—*
Grigsby, Gilbert R., 3,837,541.

Lubrizol Corporation, The: *See—*
Miller, Clark Ober, 3,838,050.
Miller, Clark Ober, 3,838,052.

Lucas Aerospace Limited: *See—*
Dean, Michael Gordon Ellis; Keen, John Raymond; and Edgington, Geoffrey, 3,838,281.
Needham, Victor; and Parramore, Maurice, 3,838,028.

Lucieer, Wouter Bram; and Van Amerongen, Theodorus Antonius Maria, to Koninklijke Nederlandsche Hoogovens en Staal-Fabrieken N.V. Ceramic burner for use in an air-preheater or hot blast stove for a blast furnace plant. 3,837,793, Cl. 432-217.000.

Lumn, George A., to Globe Machine Manufacturing Co., Inc. Super speed veneer clippers. 3,837,250, Cl. 83-424.000.

Lundy, Wilson T. Capacitive discharge ignition system. 3,838,328, Cl. 321-2.000.

Lurex N.V.: *See—*
Schoots, Peter J., 3,837,893.

Luthi, Oscar, to Improved Machinery, Inc. Drum structure for rotary drum filtering apparatus. 3,837,499, Cl. 210-404.000.

Lutz, Albert William; and Trotto, Susan Hensen, to American Cyanamid Company. Process for the preparation of certain N-3-substituted-6-(trichloromethyl) uracils. 3,838,128, Cl. 260-260.000.

Lynes, Inc.: *See—*
Malone, Billy C., 3,837,947.

Lyons, Charles S.: *See—*
Nash, Dudley O.; Lyons, Charles S.; and Hollett, Ronald C., 3,837,411.

Lyons, John G.: *See—*
Johnston, Samuel A.; Lyons, John G.; and Riedmayer, Henry J., 3,837,067.

Maag Gear-Wheel & Machine Company Limited: *See—*
Haupt, Fritz, 3,837,768.

Mac Arthur, John L.; and Raff, Barry E., to United States of America, Navy. Radar adaptive video processor. 3,838,422, Cl. 343-7.00a.

MacDermid Incorporated: *See—*
Bartolini, Michael G.; and Horner, Edmund E., 3,838,022.

Machamer, Roy J.: *See—*
Anglin, Noah L.; and Machamer, Roy J., 3,837,457.

Mack, Peter Albert: *See—*
Cotton, Joseph Bernard; Mack, Peter Albert; and Price, Raymond, 3,837,964.

Mackintosh, George B.: *See—*
McDonald, George B.; and Mackintosh, George B., 3,837,220.

Mackness, R., & Company Limited: *See—*
Sellers, Brian; Usher, Harry Graham; and Kay, Thomas William Lawrie, 3,837,021.

Madison College Foundation, Inc.: *See—*
Meyers, Siegfried S., 3,837,332.

Madsen, John S., to GAF Corporation. Multiple color embossing of flooring material. 3,837,275, Cl. 101-23.000.

Madsen, Lynn S.: *See—*
Richards, Albert Z., Jr.; and Madsen, Lynn S., 3,837,810.

Maeda, Kazuo; and Shirai, Kazunari, to Fujitsu Limited. Semiconductor devices and method of manufacturing the same. 3,837,935, Cl. 148-187.000.

Maeda, Kohei: *See—*
Nagazumi, Yasuo; Hosaka, Tokuichiro; and Maeda, Kohei, 3,837,669.

Maekawa, Kazuo, to Toyo Kogyo Company Limited. Casing for use in rotary piston engine. 3,837,320, Cl. 123-8.010.

Magee, Richard Joseph: *See—*
Diehl, Robert Eugene; and Magee, Richard Joseph, 3,837,836.

Magnien, Ernest; and Cabilio, Juta, to USV Pharmaceutical Corporation. Oximo tetracyclic indoles. 3,838,135, Cl. 260-288.00r.

Maher, Philip K.: *See—*
Vaughan, David E. W.; Maher, Philip K.; and Albers, Edwin W., 3,838,037.

Mahon, John; and Richter, Stanley J., to United States of America, Air Force. Portable repair apparatus. 3,837,965, Cl. 156-382.000.

Maier, Roland; and Muller, Erich, to Boehringer Ingelheim G.m.b.H. 3-Lower alkyl-5-[o-(ω -amino-alkoxy)-phenoxymethyl] -isoxazoles and salts thereof. 3,838,162, Cl. 260-207.00h.

Mailer, Hugh, to Ohio State University Research Foundation, The. Acoustic excited liquid crystal image detector system. 3,837,423, Cl. 181-.5ap.

Maillet, Wilfrid G.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Nosaka, Kunishi, 3,838,221.

Maisold, Karl-Heinz: *See—*
Reinecke, Erich; Klatt, Alfred; Weise, Lutz; and Maisold, Karl-Heinz, 3,837,710.

Maker, Paul Manwaring. Apparatus for, and method of, checking the contents of a computer store. 3,838,264, Cl. 235-153.0am.

Makita, Mutsuo; Hayakawa, Wataru; Hayashi, Masaaki; and Kitagawa, Yukio, to Hitachi, Ltd. Wear resisting magnetic material having high permeability. 3,837,844, Cl. 75-122.000.

Malcik, Frank J., to Swingline Inc. Corner support structure and cap member utilized in connection with same. 3,837,754, Cl. 403-217.000.

Malion, William R.; and Watkins, John E. Clutch brake mechanism with a lost motion connection. 3,837,450, Cl. 192-12.0ba.

Mallory, P. R., & Co., Inc.: *See—*
Liang, Charles C.; and Schlaikjer, Carl R., 3,837,920.

Malloy, Edward D.; and Parsons, William L., Jr., to Garlock, Inc. Butterfly valve having an improved stem seal. 3,837,620, Cl. 251-306.000.

Malmendier, Joseph W.; and Sojka, Joseph E., to Corning Glass Works. Low melting vanadate glasses. 3,837,866, Cl. 106-47.00r.

Malone, Billy C., to Lynes, Inc. Method of forming an inflatable member. 3,837,947, Cl. 156-69.000.

Maloney, William T.; and McMahon, Donald H., to Sperry Rand Corporation. Stacked photoplastic data storage system. 3,838,403, Cl. 340-173.0tp.

Maltby, Jack, to Davy and United Engineering Company Limited. Rolling mills. 3,837,201, Cl. 72-239.000.

Manabe, Mitsuo: *See—*
Kobayashi, Kengo; and Manabe, Mitsuo, 3,838,325.

Manabe, Norihisa: *See—*
Otsuka, Hiroaki; Manabe, Norihisa; and Konishi, Tatsuo, 3,838,446.

Managemant Programs, Inc.: *See—*
O'Hara, Eugene F., 3,837,095.

Mandich, Ronald P.; and Middleton, David L., to Kimberly-Clark Corporation. Apparatus and method for feeding and placing elongated flexible strip material. 3,837,975, Cl. 156-513.000.

Manlove, Glendell; and Ishler, Paul Kenneth. Molding and cabinet construction. 3,837,721, Cl. 312-257.000.

Mannesmann Aktiengesellschaft: *See—*
Wessel, Otto, 3,837,848.

Mantell, Detmar: *See—*
Kohl, Helmut; Forhauser, Siegfried; Mantell, Detmar; Granitzki, Karl-Ernst; Hess, Heinrich; and Schiefer, Paul, 3,837,630.

Marchesi, Gianfranco: *See—*
Arrigoni, Virgilio; Gaetani, Bruno; Marchesi, Gianfranco; and Zanoni, Gianfranco, 3,837,165.

Margittai, Thomas. Evaporator apparatus. 3,837,388, Cl. 159-13.00r.

Marine Colloids, Inc.: *See—*
Renn, Donald W.; and Forget, Ronald D., 3,837,960.

Maringer, Robert E.; Rudnick, Alfred; and Mobley, Carroll E., to Battelle Development Corporation. Formation of filaments directly from molten material. 3,838,185, Cl. 264-8.000.

MARINONI: *See—*
Gaillochet, Jean R., 3,837,451.

Marion, Andre F.; and Kaposhilin, George N., to Hewlett-Pachard Company. Detector indicating availability and position of tape. 3,838,291, Cl. 250-571.000.

Markbreiter, Stephen J.; and Weiss, Irving, to Processing liquefied natural gas to deliver methane-enriched gas at high pressure. . 3,837,172, Cl. 62-24.000.

Marks, Robert G.; and Beaupre, Robert E., said Marks assor. to said Beaupre, Robert E. Two wheeled roller skate. 3,837,662, Cl. 280-11.230.

Marlen Research Corporation: *See—*
Long, Marshall; Alley, Lewis F.; and Reynolds, William A., 3,837,249.

Marlo, John A.: *See—*
Schaffer, James L., 3,837,328.

Marquardt, Bruno; and Bosse, Frank, to Windmoller & Holscher. Carrier bag. 3,837,564, Cl. 229-54.00r.

Marra, Theodore F., to Goodyear Tire & Rubber Company, The. Tire building drum. 3,837,968, Cl. 156-415.000.

Marraccini, Franco, to Olivetti, Ing., C., & C., S.p.A. Office chair. 3,837,705, Cl. 297-353.000.

Marshman, Edward F.; and Warmann, Bruno D., to Webb, Jervis B., Company. Conveyor. 3,837,289, Cl. 104-172.00b.

Martin Marietta Corporation: *See—*
Shoch, Clinto W.; and Harmon, George Lamar, 3,837,733.

Martin, Peter G., to Little, Arthur D. Inc. Word processor with means for programming indented paragraph format. 3,837,459, Cl. 197-19.000.

Martin, Peter G., to Little, Arthur D., Inc. Data processor (including editing and revision) with buffer memory. 3,838,396, Cl. 340-172.500.

Martin, Robert M. Toggle bar for brachiation in place by the upper limbs. 3,837,642, Cl. 272-62.000.

Martin, Waylan C. Selective plugging process. 3,837,400, Cl. 166-274.000.

Martin, Wilbur L., Jr.: *See—*
Higgens, Calvin E.; and Martin, Wilbur L., Jr., 3,838,012.

Martin, William A.; and St. Clair, John Q., to Eastman Kodak Company. Motion picture projector apparatus. 3,837,737, Cl. 352-124.000.

Martin, Wolfgang; Schwoerer, Ulrich; Bauer, Wolfgang; and Staufer, Dieter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method of drawing moving threads or yarns into narrow channels and apparatus therefor. 3,837,052, Cl. 28-1.00r.

Martin-Thomas, Ltd.: *See—*
Mattinson, Frederick, 3,837,427.

Martinko, Matyas; Martos, Ferenc; and Jutas, Titusz, to Banyaszati Kutato Intezet, Varpalotai Szenbanyak and Orszagos Banyagepgyarto Vallalat. Sealing and position rectifying mechanism for shield supports. 3,837,170, Cl. 61-45.00d.

Martins, Samuel J., to Airheart Products, Inc. Ratchet actuated brake wear compensation. 3,837,437, Cl. 188-71.800.

Martos, Ferenc: *See—*
Martinko, Matyas; Martos, Ferenc; and Jutas, Titusz, 3,837,170.

Maruko Seiyaku Kabushiki Kaisha: *See—*
Sugiura, Mamoru; Kitamikado, Tadashi; and Kato, Kazuo, 3,838,150.

Maruscak, John; and Hendry, George McRae, to GTE Automatic Electric Laboratories Incorporated. Matrix switch with improved activator translating arrangement. 3,838,239, Cl. 200-175.000.

Maruta, Masayasu: *See—*
Akamatsu, Kiyoshi; Maruta, Masayasu; and Yonekura, Yasushi, 3,837,887.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,837,892, Cl. 117-62.100.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,837,897, Cl. 117-72.000.

Masaki, Tatsuo; Hanada, Hiroshi; and Kitashima, Nobuo, to Canon Kabushiki Kaisha. Electrophotographic method of imaging with an element containing an amorphous semiconductor. 3,837,853, Cl. 96-1.500.

Masi, James Vincent, to Bunker Ramo Corporation, The. Color plasma display. 3,838,307, Cl. 313-486.000.

Mason, Edwin E., to MI², Inc. Automatic telephone answering device for use with a data modem. 3,838,219, Cl. 179-2.0dp.

Mason, John H.: *See—*
Economy, James; Highsmith, Ronald E.; and Mason, John H., 3,837,997.

Mason, Ralph S. Vertical take-off and landing airplane. 3,837,600, Cl. 244-12.00r.

Massage, Thomas J. Method and apparatus for testing sealed containers. 3,837,215, Cl. 73-45.400.

Massey-Ferguson, Inc.: *See—*
Peterson, Merle H., 3,837,235.

Masson Scott Thrissell Engineering Limited: *See—*
Clarke, William Frank, 3,837,591.

Masuda, Maosuke; Abe, Toshihiro; and Kato, Yoshihiko, to Jidosha Kiki Co., Ltd. Load sensing proportioning valve. 3,837,713, Cl. 303-22.00r.

Masumoto, Hakaru; Murakami, Yuetsu; and Hinai, Masakatsu, to Foundation: The Research Institute of Electric and Magnetic Alloys. Heat treated magnetic material. 3,837,933, Cl. 148-31.550.

Masuyama, Takeshi: *See—*
Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, 3,838,378.

Matar, Adel F. Vanous valve snipper. 3,837,345, Cl. 128-305.000.

Mather, Walter B., III: *See—*
Lloyd, Neil E.; and Mather, Walter B., III, 3,837,155.

Mathis, Ronald D., to Phillips Petroleum Company. UV stabilizing system for polymeric materials comprising phenyl benzoate and nickel or cobalt complexes of partially fluorinated beta diketone. 3,838,099, Cl. 260-45.75n.

Matras, Edward J.; and Broling, Fred W., to FMC Corporation. Gas diffusing mechanism. 3,837,629, Cl. 261-122.000.

Matsuo, John T., to United States of America, Navy. Means for controlling the deployment and the development of a parachute canopy. 3,837,604, Cl. 244-152.000.

Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, to Matsushita Electric Industrial Co., Ltd. Voltage-nonlinear resistors. 3,838,378, Cl. 338-20.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Fujiwara, Yoshihiro; and Meki, Norio, 3,838,208.
Matsuoka, Michio; Kobayashi, Yoshikazu; Itakura, Gen; and Masuyama, Takeshi, 3,838,378.
Mino, Mineo, 3,838,451.
Tsuchiya, Mitsuharu; Sato, Teruo; Takeda, Hitoshi; and Yoshiyama, Masami, 3,838,209.

Matsushita Electric Works, Ltd.: *See—*
Hoshioka, Hideoki, 3,838,237.

Mattinson, Frederick, to Martin-Thomas, Ltd. Builders' staging. 3,837,427, Cl. 182-115.000.

Mattos, David W. Adjustable cutting arrangement for fruit pitting apparatus. 3,837,273, Cl. 99-555.000.

Mattson, Tauno O. H., to Texaco Inc. Apparatus for filtering flue gas. 3,837,148, Cl. 55-234.000.

Matty, Thomas C., to Westinghouse Electric Corporation. Amplifier with failsafe predetermined gain. 3,838,353, Cl. 330-107.000.

Matzner, Edwin A.; and Mitchell, Robert S., to Monsanto Company. Derivatives of isocyanuric acid and processes for preparing the same. 3,838,124, Cl. 260-248.0ns.

Maurer, Gottfried: *See—*
Sahatjian, Edward; and Maurer, Gottfried, 3,837,532.

Maxwell, Richard D. Rotary impact dril. 3,837,410, Cl. 173-109.000.

Mayer, Otto Fritz, to Georg Fischer Aktiengesellschaft. Apparatus for cooling or drying pourable material. 3,837,092, Cl. 34-168.000.

Mayer-Mader, Rudolf: *See—*
Schnorin, Hildegard; Pampus, Gottfried; and Mayer-Mader, Rudolf, 3,838,086.

Mayer-Mader, Rudolf; and Boldt, Jurgen, to Bayer Aktiengesellschaft. Molecular weight regulation in chloroprene polymers. 3,838,140, Cl. 260-92.300.

Mayne, Jimmy C.: *See—*
Van House, Robert M.; and Mayne, Jimmy C., 3,837,711.

Mays, Robert K.: *See—*
Bertorelli, Orlando L.; Mays, Robert K.; Williams, Lloyd E.; and Zimmerman, Howard F., Jr., 3,838,192.

Mays, Wilburt W. Rubber-material inserter. 3,837,243, Cl. 81-15.700.

Mayuzumi, Tetsuya; and Inoue, Yoshio, to Shinetsu Chemical Company. Organosilicone compositions. 3,837,876, Cl. 106-287.0sb.

Mazurek, Henry E., to Cenco Incorporated. Wave generating apparatus for study of wave phenomena. 3,837,094, Cl. 35-19.00r.

Mc Kone, Donald B.: *See—*
Ewanus, Walter; and Mc Kone, Donald B., 3,838,350.

Mc Master, Richard Laverne, to Detection Systems, Inc. Environmental test switch for intruder detection systems. 3,838,408, Cl. 340-214.000.

Mc Pherson, John Hugh: *See—*
Warman, Bloomfield James; Evans, John Ford; Walker, Stephen Sidney; Mc Pherson, John Hugh; and Sutton, Alan, 3,838,226.

McCabe, John M.: *See—*
Trachtenberg, William; McCabe, John M.; and Kasper, George P., 3,838,054.

McCaffrey, Terence P.; and Gray, Paul R., to Fairchild Camera and Instrument Corporation. Monolithic MOS/bipolar integrated circuit structure. 3,838,440, Cl. 357-43.000.

McCarthy, John Francis: *See—*
Hill, Kenneth Lee; and McCarthy, John Francis, 3,837,834.

McCarthy, Robert Joseph, to Brown, Robert A. Trailer backable to loading dock from either end. 3,837,673, Cl. 280-415.00b.

McClain, Robert D.: *See—*
Miller, Gene L.; McNally, James J.; and McClain, Robert D., 3,838,334.

McClellan, Ralph E., to Meilink Steel Safe Company. Modular safe deposit box assembly. 3,837,299, Cl. 109-56.000.

McCombs, Frank Paul; and Roberts, Michael Graeg, to Owens-Corning Fiberglas Corporation. Glass fiber size composition. 3,837,898, Cl. 117-72.000.

McConnell, John F.: *See—*
Pecoraro, George A.; McConnell, John F.; and Knavish, Leonard A., 3,837,832.

McConnell, Richard L.; and Huffaker, James E. Reinforced cushioning material. 3,837,990, Cl. 161-68.000.

McCormick, Maurice D.: *See—*
Georgopulos, Thomas; and McCormick, Maurice D., 3,838,213.

McCoy, Wallace W. Panel structure having an intermediate filler of random oriented, resin rigidified particles of cellulosic material. 3,837,989, Cl. 161-68.000.

McCracken, Robert H., to United States of America, Army. Active optical fuze. 3,837,283, Cl. 102-70.20p.

McCulloch, Corporation: *See—*
Anderson, Harold E., 3,838,323.

McDonald, George B.; and Mackintosh, George B., to Control Data Canada, Ltd. Determination of gross thrust-related parameters. 3,837,220, Cl. 73-117.400.

McDonald, Harold Paul, Jr.; and Varga, John, to East/West Medical Products, Inc. Irrigator liquid supply systme. 3,837,379, Cl. 141-232.000.

McDonie, Arthur Rederick, to RCA Corporation. Method of making a bialkali photocathode with improved sensitivity and high temperature operating characteristics. 3,838,304, Cl. 313-94.000.

McDonough, Thomas B.; and Shaffer, John W., to GTE Sylvania Incorporated. Photoflash assembly with serially advancing lamps and ejector. 3,837,786, Cl. 431-93.000.

McDuffee, Richard L. System for toilet bowl cleaning. 3,837,017, Cl. 4-228.000.

McEvers, William R.,Jr.: *See—*
Richter, Albert P., Jr.; and McEvers, William R.,Jr., 3,837,223.

McFee, James Hoffman: *See—*
Logan, Ralph Andre; McFee, James Hoffman; Nahory, Robert Edward; Pollack, Martin Alan; and 400852, 3,837,728.

McGinnis, Bernard W.: *See—*
Barbeau, Raymond A.; McGinnis, Bernard W.; and Weidenhammer, James A., 3,838,461.
Barbeau, Raymond A.; McGinnis, Bernard W.; Orlando, Anthony W.; and Weidenhammer, James A., 3,838,462.

McGough, Gerald B., to GTE Automatic Electric Laboratories Incorporated. Self-locking coin receptacle. 3,837,566, Cl. 232-15.000.

McIntyre, Raymond D.; and Nunan, Craig S., to Varian Associates. Linear particle accelerator system having improved beam alignment and method of operation. 3,838,284, Cl. 250-385.000.

McJones, Robert W. Temperature compensated changing system and process for natural gas and the like. 3,837,377, Cl. 141-4.000.

McKendrick, Lorne J. Lubrication system for pneumatic device. 3,837,432, Cl. 184-7.00d.

McLaughlin, Donald W.: *See—*
Lee, David Q.; and McLaughlin, Donald W., 3,838,223.
Lee, David Q.; and McLaughlin, Donald W., 3,838,228.

McLaughlin, James H.: *See—*
Bajek, Walter A.; and McLaughlin, James H., 3,838,014.

McLeod, Eric S., to National Semiconductor Corporation. Emitter coupled logic transistor circuit. 3,838,296, Cl. 307-243.000.

McMahon, Donald H.: *See—*
Maloney, William T.; and McMahon, Donald H., 3,838,403.

McMichael, B. Frank; and Baranski, Edward J. Mobile home leveling and hold-down support. 3,837,127, Cl. 52-126.000.

McNally, James J.: *See—*
Miller, Gene L.; McNally, James J.; and McClain, Robert D., 3,838,334.

McNulty, Patrick J.; Bayer, Horst O.; and Seidel, Michael C., to Rohm & Haas Company. N-aryl 5-(or 6-) methylpyrid-2-ones. 3,838,155, Cl. 260-295.50r.

McQueary, Leroy W.: *See—*
Huston, Richard A.; and McQueary, Leroy W., 3,837,521.

McQuillen, Albert L., Jr., 33 Hundred, Inc. Method and means for sealing ingot casting molds to stools. 3,837,393, Cl. 164-342.000.

McSorley, David J.; and De Croos, Jaye, to Alarm Equipment Supplies Limited. Security alarm system with fault indication. 3,838,419, Cl. 340-409.000.

McTighe, Gilbert T.; and Johansson, Sture A. Self-cleaning restroom, and method for cleaning a restroom. 3,837,011, Cl. 4-1.000.

McWilliams, Joseph E. Method of loading bagged mail from a loading dock into a highway vehicle. 3,837,510, Cl. 214-152.000.

Meadows, James Edward; Horsman, Larry Ray; and Carpentier, Anthony Louis, to Storage Technology Corporation. Maintenance facility for a magnetic tape subsystem. 3,838,400, Cl. 340-172.500.

Mebus, Charles A.; and Twiehaus, Marvin J., to University of Nebraska, Board of Regents of the. Calf diarrhea virus vaccine and processes. 3,838,004, Cl. 195-1.300.

Medendorp, Roger L., to Kirkhof Manufacturing Corporation. Cover for produce carton. 3,837,526, Cl. 220-60.00r.

Medovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Medrano, Joseph, Jr. Apparatus for producing continuous lengths of reinforced plastic pipe. 3,837,970, Cl. 156-425.000.

Mehrhof, Werner: *See—*
Pohlke, Rolf; Jonas, Rochus; Mehrhof, Werner; Schlier, Hans-Jochen; Becker, Karl Heinz; Nowak, Herbert; and Simane, Zdenek, 3,838,147.

Meilink Steel Safe Company: *See—*
McClellan, Ralph E., 3,837,299.

Meissner, Konrad E.; Lane, William A.; and Pelster, Edwin J., to Filper Corporation. Apparatus for forming containers. 3,837,782, Cl. 425-347.000.

Meitinger, Heinz. Device for adjusting the dial train of watches. 3,837,162, Cl. 58-67.000.

Meki, Norio: *See—*
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Mele, John J.: *See—*
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Meltzer, Harold: *See—*
Wood, M. Dale, 3,837,800.

Melvin, William J., to Collins Radio Company. Data modem apparatus. 3,838,415, Cl. 340-347.0dd.

Membre, Bernard Alfred Georges; and Clairet, Daniel Eugene Joseph Modeste, to Boussois S. A. Method and a device for introducing inner tubes into pneumatic tyres. 3,837,064, Cl. 29-235.000.

Mena, Andre: *See—*
Pons, Rene; Poyet, Marcel; Desbert, Jean; and Mena, Andre, 3,837,843.

Mend, William; and Treude, Robert C., to Westinghouse Electric Corporation. Phototransistor array having reduced crosstalk. 3,838,276, Cl. 250-211.00j.

Menelly, Richard A., to International Telephone and Telegraph Corporation. Coated coil emissive electrode. 3,837,909, Cl. 117-224.000.

Menough, Richard M.; and Cuddigan, Robert W., to Gates Rubber Company, The. Breaker bands for pneumatic tire. 3,837,387, Cl. 152-361.00r.

Menz, Elsie L., to Xerox Corporation. Image transfer process. 3,837,883, Cl. 117-17.500.

Mepham, Herbert J.; and Rempfer, Gertrude F., to Elektros, Inc. Automatic identification and magnification marking system for micrographs. 3,838,435, Cl. 354-109.000.

Mercer, James B.: *See—*
Mercer, James B., 3,838,196.

Mercer, James B., to Mercer, James B. and Purdy, Neil B. Method of treating arteriosclerosis. 3,838,196, Cl. 424-319.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Pohlke, Rolf; Jonas, Rochus; Mehrhof, Werner; Schlier, Hans-Jochen; Becker, Karl Heinz; Nowak, Herbert; and Simane, Zdenek, 3,838,147.

Merdinian, Geroge K.; and Mizuhara, Yosuke M., to Varian Associates. Gang-tuned multicavity microwave tube. 3,838,308, Cl. 315-5.470.

Merianos, John J.; and Adams, Phillip, to Millmaster Onyx Corporation. Amino derivatives of tetrasubstituted benzene compounds. 3,838,197, Cl. 424-330.000.

Merker, Steve L.: *See—*
Stungis, George E.; Merker, Steve L.; and Heitkamp, Norman D., 3,837,481.

Meronek, Petro W. Flow control device. 3,837,363, Cl. 138-45.000.

Mesek, Frederick K., to Johnson & Johnson. Disposable diaper, fabric useful therein, and method of manufacture. 3,837,343, Cl. 128-287.000.

Meserol, Peter M.: *See—*
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Acker, Jesse L.; and Meserol, Peter M., 3,837,746.

Mesnel, Francois Pierre, to Etablissements Mesnel. Method of shaping a sealing strip. 3,837,957, Cl. 156-221.000.

Messerschmidt, Otto, to Otto, C., Dr., & Comp. G.m.b.H. Regenerator for coke ovens. 3,838,017, Cl. 202-141.000.

Messerschmitt-Bolkow-Blohm: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
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Metlitsky, Vladislav Alexandrovich: *See—*
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Meyer, Gustave, 40% to Stumpf, Irving L. and 20% to Primozich, Raymond R. Loader bucket with ejector. 3,837,516, Cl. 214-767.000.

Meyer, Warns E. Paint spinner spray guard. 3,837,091, Cl. 34-58.000.

Meyerhuber, Wittich; Koblitz, Werner; and Suppe, Hansjoachim, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Knitting mechanism for producing pile fabric. 3,837,184, Cl. 66-93.000.

Meyers, Siegfried S., 90% to Madison College Foundation, Inc. Voice-operated gas lamp stroboscopes. 3,837,332, Cl. 128-2.00r.

Mezynski, Stanley M., to Goodyear Tire & Rubber Company, The. Method of making a tire building sleeve and said sleeve. 3,837,969, Cl. 156-416.000.

Michalko, Ignatius, to Power Conversion, Inc. Method and apparatus for crimping battery casings. 3,837,206, Cl. 72-348.000.

Michalski, Raymind J.; and Cantwell, John T., to Nalco Chemical Company. Molybdenum disulfide floatation antifoam. 3,837,489, Cl. 209-167.000.

Michelet, Robert Wilson; Natale, Stephen Vincent; and Phillips, David Edward, to Bell Telephone Laboratories, Incorporated. Power supply circuit. 3,838,329, Cl. 321-2.000.

Michon, Dominique, to Compagnie Generale de Geophysique. Operational disposition for obtaining three-dimensional seismic information. 3,838,390, Cl. 340-15.5mc.

Middleton, David L.: *See—*
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Midland-Ross Corporation: *See—*
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Mill Conversion Contractors, Inc.: *See—*
Baardson, Andrew, 3,837,303.

Miller, Bruce D., to Refco, Inc. Refrigeration system having improved heat transfer and reduced power requirements. 3,837,175, Cl. 62-192.000.

Miller, Clark Ober, to Lubrizol Corporation, The. Lubricants and fuels containing ester-containing compositions. 3,838,050, Cl. 252-40.500.

Miller, Clark Ober, to Lubrizol Corporation, The. Lubricants and fuels containing ester-containing compositions. 3,838,052, Cl. 252-56.00r.

Miller, Dale E., to Continental Oil Company. Method and apparatus for determining the presence of and depth to a horizontal electrical resistivity contrast beneath the earth surface. 3,838,335, Cl. 324-10.000.

Miller, Douglas S.: *See—*
Ishimitsu, Kichio; Kelly, John D.; Miller, Douglas S.; and Taylor, Gordon A., 3,838,425.

Miller, Edwin E.: *See—*
Endter, Dale S.; and Miller, Edwin E., 3,837,637.

Miller, Gene L.; McNally, James J.; and McClain, Robert D., to Westinghouse Electric Corporation. Electrical device with two-terminal bushing. 3,838,334, Cl. 323-93.000.

Miller, John H. Pipe expansion and repair fitting. 3,837,685, Cl. 285-45.000.

Miller, Joseph J.: *See—*
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Miller, Mildred: *See—*
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Millmaster Onyx Corporation: *See—*
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Mills, David E.; and Sorbie, Thomas B., to Owens-Illinois, Inc. Glass container inspection system. 3,837,468, Cl. 198-236.000.

Minasy, Arthur J.; and Pruzick, Ronald, to Knogo Corporation. Field strength uniformity control system for article theft detection system. 3,838,409, Cl. 340-258.00c.

Mindt, Wolfgang; Racine, Philippe; and Schlapfer, Peter, to Hoffmann-La Roche Inc. Enzyme electrode. 3,838,033, Cl. 204-195.00b.

Mine, Kiyomitsu: *See—*
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Minks, Floyd A.: *See—*
Minks, Floyd M.; and Minks, Floyd A., 3,837,325.

Minks, Floyd M.; and Minks, Floyd A. Pulse generator for energy discharge system. 3,837,325, Cl. 123-148.00e.

Minnesota Mining & Manufacturing Company: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
Hennen, Donald E.; and Kusilek, Leroy I., 3,837,988.
Roden, John S., 3,837,912.

Mino, Mineo, to Matsushita Electric Industrial Co., Ltd. Magnetic tape reproducing system having secondary shorting of a rotary transformer for head switching. 3,838,451, Cl. 360-64.000.

Minolta Camera Kabushiki Kaisha: *See—*
Imura, Toshinori, 3,838,433.

Mintz, Leonard H. Roadway safety trap. 3,838,391, Cl. 340-39.000.

Miroshnichenko, Viktor Alexandrovich: *See—*
Dakhov, Mark Illarionovich; Nesterov, Pavel Petrovich; Semkin, Alexei Trofimovich; Alexeeva, Ljudmila Andreevna; Sakhnovsky, Arkady Zinovievich; Skrypnik, Ivan Timofeevich; Klimovsky, Lev Lvovich; and Miroshnichenko, Viktor Alexandrovich, 3,837,152.

Mitchell, Robert S.: *See—*
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Mitchell, Roger H. Angular coupling. 3,837,180, Cl. 64-17.00r.

Mitsubishi Chemical Industries, Limited: *See—*
Hoshino, Yoichi; Honda, Kotaro; Funayama, Chihito; and Tanaka, Goro, 3,838,074.

Mitsubishi Denki Kabushiki Kaisha: *See—*
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Mitsuda, Susumu: *See—*
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Hirose, Kiyoshi; Shiozawa, Kaoru; and Saito, Yuzi, 3,837,061.
Toyama, Yoshio, 3,837,310.

Mitsuo, Koda. Excrement receiving bag for artificial anus. 3,837,342, Cl. 128-283.000.

Miyagi, Tatsuo; and Sakata, Shigeru, to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd. Control device for an absorption system hot and cold water supply apparatus. 3,837,174, Cl. 62-141.000.

Miyatuka, Hajime, to Rank Xerox, Ltd., mesne. Photoconductive rutile titanium dioxide. 3,837,850, Cl. 96-1.500.

Miyauchi, Kazuto: *See—*
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Miyazaki, Kazuhide; Yamamoto, Michiaki; Kobayashi, Shigehiko; and Sakai, Toshiyuki, to Mitsui Mining and Smelting Co., Ltd. Catalyst for use in purification of exhaust gas containing carbon monoxide. 3,838,069, Cl. 252-456.000.

Mizuguchi, Hironori: *See—*
Asakura, Hiroshi; Sakai, Keisuke; Koyama, Masaru; and Mizuguchi, Hironori, 3,837,973.

Mizuhara, Yosuke M.: *See—*
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MI², Inc.: *See—*
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Schindler, Herbert; and Ware, Willard O., 3,837,789.

Moberg, Lennart, to Allmanna Svenska Elektriska Aktiebolaget. Method of manufacturing a coherent roebel bar coil. 3,837,072, Cl. 29-596.000.

Mobil Oil Company: *See—*
Andress, Harry J., Jr., 3,838,051.

Mobley, Carroll E.: *See—*
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Mocanu, Erick L.: *See—*
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Modern Equipment Company: *See—*
Eickelberg, Henry L., 3,837,531.

Modert, E. Lamar; and Stier, Paul G., to Universal Oil Products Company. Combination cabinet edge trim strip and curved guide track for tambour door and method of forming same. 3,837,041, Cl. 16-94.00r.

Moffitt, Charles Rayburn; and Dalton, Ralph Warren. Precision needle-point blocker. 3,837,099, Cl. 38-102.500.

Mogford, Edmund C. Process and apparatus for forming a glass and film laminate. 3,837,952, Cl. 156-99.000.

Mohammed, M. Hamdi A. High strength, ductile cobalt-base dental alloy. 3,837,838, Cl. 75-134.00f.

Molby, Lloyd A., to Capacity, Inc. Tractor and mud flap therefor. 3,837,672, Cl. 280-154.50r.

Molina, Orlando G., to Air Products and Chemicals, Inc. Dye penetrant method and composition. 3,838,160, Cl. 252-301.20p.

Mollman, Robert E., to Alside, Inc. Panel clip. 3,837,133, Cl. 52-483.000.

Monahan, Thomas J.; and Adams, Richard C., to Schjeldahl, G. T. Company. Intermittent drive mechanism. 3,837,552, Cl. 226-122.000.

Monarch Marking Systems, Inc.: *See—*
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Grushon, Harold N., 3,837,554.
Herrin, Carlos B., 3,838,251.

Moncrief, E. Ray. Seals for rotary shafts. 3,837,659, Cl. 277-74.000.

Monk, Carl E. Key retaining device. 3,837,190, Cl. 70-45.60r.

Monroe Belgium N.V.: *See—*
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Van den Berg, Johan H.; Hoebrechts, Albert J. G.; and Van Eekelen, Alex Herman A. M., 3,837,033.

Monsanto Company: *See—*
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Montagna, Angelo A.: *See—*
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Montblanc-Simplo GmbH: *See—*
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Moore, Paul W., to Phillips Petroleum Company. Fibers for pillow stuffing. 3,837,022, Cl. 55-355.000.

Moore, Ronald H., to Owens-Illinois, Inc. Melting and refining of amber glass. 3,837,831, Cl. 65-134.000.

Moosburger, Hans: *See—*
Nudinger, Gunter; Collin, Heinrich; and Moosburger, Hans, 3,837,954.

Moraru, Dinu Stefan; Pitis, Ion; and Topala, Dumitru, to Institutul de Cercetari in Constructii si Economia Constructiilor-Incerc. Composition for preventing biodeterioration of concrete in biologically active water. 3,837,864, Cl. 106-15.0af.

Morgan Construction Company: *See—*
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Morgardshammar Aktiebolag: *See—*
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Morgenstern, Bodo; and Soderholm, Bert, to Organisation Europeenne de Recherches Spatiales. Optical sensor with linear parabolic mirror. 3,838,277, Cl. 250-216.000.

Mori, Masahiro; Hahn, Walter C.; and Avitzur, Betzalel, to United States of America, Atomic Energy Commission. Method of extruding aluminum coated NB-TI. 3,837,066, Cl. 29-599.000.

Moriyama, Kazuyoshi, to Hitachi, Ltd. Electric machine with flywheel-fan. 3,838,301, Cl. 310-60.000.

Morrell, Ronald Joseph: *See—*
Laing, Graham Sterling; Morrell, Ronald Joseph; and Gumb, Bev. William, 3,838,232.

Morrell, Ronald Joseph; Gumb, Bev William; Laing, Graham Sterling; and Cogan, Frederick Thomas, to Bell-Northern Research Ltd. Telephone sets and removable covers therefore. 3,838,229, Cl. 179-100.00d.

Morrison, Alexander Robley, to Dulux Australia Ltd. Conversion coating on metal. 3,837,928, Cl. 148-6.15z.

Morrow, Warren P., to United States of America, Army. Ordnance timer using chemical light. 3,837,282, Cl. 102-70.20r.

Morse, Donald B.; and Pribish, Bernard A., to Kemlite Corporation. Machine for trimming the edges of panels. 3,837,247, Cl. 83-156.000.

Mosler, Henry A., to Esso Research and Engineering Company. Constraint control for processes with equipment limitations. 3,838,256, Cl. 235-150.100.

Moss, Philip Hotchkiss; and Cuscurida, Michael, to Jefferson Chemical Company, Inc. Polyurethane foams, from partially aminated polyether polyols. 3,838,076, Cl. 260-2.5aq.

Motoren- und Turbinen-Union Munchen GmbH: *See—*
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Motorola, Inc.: *See—*
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Huber, William B., 3,838,454.
Nickerson, Douglas W., 3,838,349.
Wiles, Michael F., 3,838,414.
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Mott, James D., to Hydril Company. Alternating valve method and apparatus. 3,837,403, Cl. 166-315.000.

Mucsy, Endre: *See—*
Palovits, Pal; Laar, Tiborne; and Mucsy, Endre, 3,837,614.

Muggli, Sergio, to Fehr & Reist AG. Apparatus for forming packages from continuously incoming printed products or the like. 3,837,505, Cl. 214-6.0ba.

Mulka, John Daniel: *See—*
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Muller, Anton: *See—*
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Muller, Erich: *See—*
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Muller, Heinz: *See—*
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Muller, Victor C.: *See—*
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Muller, Walter: *See—*
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Mullins, John Albert, to Rolls-Royce (1971) Limited. Mountings for power plants. 3,837,602, Cl. 244-54.000.

Mundy, William L., .. O'Fallon Investment Company. Cutting tool for the continuous machining of metals and the method of making same. 3,837,240, Cl. 76-101.00a.

Murakami, Yuetsu: *See—*
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Murphy Chemical Limited: *See—*
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Murphy, G. W., Industries, Inc.: *See—*
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Murphy, John A. Composition for cleaning, sealing preserving, protecting and beautifying host materials. 3,837,875, Cl. 106-264.000.

Murphy, Thomas J.: *See—*
Haberland, Peter H.; Lay, Frank M.; Murphy, Thomas J.; Skolnik, Marvin B.; Spencer, Oliver S.; Wagner, Peter R.; Whitaker, Howard L.; and Wilson, Donald M., 3,837,724.

Murray, Bruce D.: *See—*
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Musil, Ivan: *See—*
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Mutchler, Paul A., to United States of America, Army. Liquid fuel-fired grille. 3,837,329, Cl. 126-44.000.

Mutschall, Hugo: *See—*
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Myers, John L.; Lasher, Richard W.; and James, Russell D., to Union Carbide Corporation. Pigmented asbestos latex emulsion paint composition. 3,838,085, Cl. 260-29.60r.

Naas, Hartley M.; Sutherland, Julian C.; and Nesbitt, Dale D., to Singer Company, The. Control for a matrix printing assembly. 3,838,250, Cl. 235-61.90r.

Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,838,170.
Houlihan, William J.; and Nadelson, Jeffrey, 3,838,174.

Naegeli, Werner, to Pavena AG. Stable band consisting of sized staple fibers and possessing high lengthwise stability. 3,837,998, Cl. 161-170.000.

Nagano, Hiroyuki: *See—*
Shindo, Minoru; Kakimoto, Morio; and Nagano, Hiroyuki, 3,838,117.

Nagasawa, Takeshi; Kuroiwa, Katsumasa; Narita, Kouichi; Hashimoto, Reiko; and Tamaki, Kohji, to Nitto Boseki Co., Ltd. Glass fiber-reinforced plastics and process for producing the same. 3,838,096, Cl. 260-40.00r.

Nagazumi, Yasuo; Hosaka, Tokuichiro; and Maeda, Kohei, to Nissan Motor Company. Protector bag storage device of motor vehicle safety device. 3,837,669, Cl. 280-150.0ab.

Nahory, Robert Edward: *See—*
Logan, Ralph Andre; McFee, James Hoffman; Nahory, Robert Edward; Pollack, Martin Alan; and 400852, 3,837,728.

Nakabayashi, Takashi, to Industrial Science and Technology, Agency of. Sodium sulfur storage battery. 3,837,918, Cl. 136-6.0fs.

Nakada, Akira, to Nippon Gakki Seizo Kabushiki Kaisha. Device for imparting to a musical tone a tone color varied with time. 3,838,202, Cl. 84-1.240.

Nakagawa, Toshio William; and Rudy, Thomas P., to United Aircraft Corporation. Solid composite propellant compositions containing carboxy-terminated polymers. 3,837,939, Cl. 149-19.000.

Nakagome, Makoto; and Takeuchi, Shohgo, to Pioneer Electronic Corporation. Magnetic tape reproducing apparatus. 3,838,458, Cl. 360-93.000.

Nakamura, Kazumasa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hybrid electric power vehicle. 3,837,419, Cl. 180-65.00r.

Nakamura, Yoshikatsu, to Nippon Piston Ring Co., Ltd. Sliding member having a spray-coated layer. 3,837,817, Cl. 29-195.000.

Nakao, Susumu: *See—*
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Nakayama, Takashi: *See—*
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Nakayama, Yoshifumi: *See—*
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Nakazaki, Tadashi: *See—*
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Nalco Chemical Company: *See—*
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Nara, Kaoru: *See—*
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Narita, Kouichi: *See—*
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Narr, Berthold: *See—*
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Nash, Dudley O.; Lyons, Charles S.; and Hollett, Ronald C., to General Electric Company. Diverter valve for a gas turbine with an augmenter. 3,837,411, Cl. 137-610.000.
Nashua Corporation: *See—*
Doyle, Daniel C., 3,838,464.
Natale, Stephen Vincent: *See—*
Michelet, Robert Wilson; Natale, Stephen Vincent; and Phillips, David Edward, 3,838,329.
Natelson, Samuel, to Rohe Scientific Corporation. Compact, flexible, multiple fluid dispenser. 3,837,534, Cl. 222-137.000.
National Cash Register Company, The: *See—*
Patel, Ramesh U.; and Aleshire, Rex A., 3,837,462.
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National Rejectors Inc. GMBH: *See—*
Joeck, Willi Friedrich, 3,837,454.
National Research Development Corporation: *See—*
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National Research Institute for Metals: *See—*
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National Semiconductor Corporation: *See—*
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Nattefort, Fritz, to Rockwell International Corporation. Machining device with a rotary working spindle. 3,837,718, Cl. 308-77.000.
Needham, Victor; and Parramore, Maurice, to Lucas Aerospace Limited. Sputtering apparatus. 3,838,028, Cl. 204-298.000.
Nelson, Alfred Dwayne; and Goken, Garold L., to Minnesota Mining & Manufacturing Company. Method of forming adhesively bonded rail joint. 3,837,948, Cl. 156-71.000.
Nelson, Frank M., to Xerox Corporation. Microprogrammable control memory diagnostic system. 3,838,260, Cl. 235-153.0ak.
Nelson, Howard F., 1/2 to Lemieux, George. Vise for tubular articles. 3,837,632, Cl. 269-48.100.
Nelson, James Roger: *See—*
West, Neil L.; and Nelson, James Roger, 3,837,149.
Nelson, Vaughn A.; Fadden, Donald K.; and Lech, Richard J., to International Harvester Company. Hydraulic control valve with pressure sensitive latch. 3,837,359, Cl. 137-624.270.
Nemeth, Robert C.; and Dugger, William D., to Vacuum Instrument Corporation. Tracer gas-permeable probe for leak detectors. 3,837,228, Cl. 73-40.700.
Nemoto, Tadashi; Kuniya, Keiichi; and Tamamura, Takeo, to Hitachi, Ltd. Composite iron-base metal product. 3,837,931, Cl. 148-12.400.
Nerger, David. Ski carrying case. 3,837,548, Cl. 224-45.00s.
Nesbitt, Dale D.: *See—*
Naas, Hartley M.; Sutherland, Julian C.; and Nesbitt, Dale D., 3,838,250.
Ness, Clemet M. Snowmobile loading ramp. 3,837,663, Cl. 280-8.000.
Nesterov, Pavel Petrovich: *See—*
Dakhov, Mark Illarionovich; Nesterov, Pavel Petrovich; Semkin, Alexei Trofimovich; Alexeeva, Ljudmila Andreevna; Sakhnovsky, Arkady Zinovievich; Skrypnik, Ivan Timofeevich; Klimovsky, Lev Lvovich; and Miroshnichenko, Viktor Alexandrovich, 3,837,152.
Neuenburg, Henry. Motor driven chiseling device. 3,837,230, Cl. 74-47.000.
Neuhof-Suski, Laszlo: *See—*
Hangos, Istvan; Varkonyi, Laszlo; Hodacs, Jozsef; and Neuhof-Suski, Laszlo, 3,837,926.
Neumann, Otto Walter; and Korpics, Frank Joseph, to Amsted Industries Incorporated. Snubbed railway truck bolster and side frame. 3,837,293, Cl. 105-197.0db.
New England Research Associates, Inc.: *See—*
Sims, John C., Jr., 3,838,449.
New York Society for the Relief of the Ruptured and Crippled: *See—*
Walker, Peter S., 3,837,009.
Newell, Carl W.: *See—*
Chartrain, Armand N.; and Newell, Carl W., 3,838,386.
Newton, Alwin B., to Borg-Warner Corporation. Verticla surface vapor condensers. 3,837,396, Cl. 165-111.000.
Ng, Daniel Y. C.; Wolfson, Sidney K., Jr.; and Appleby, Anthony J., to Institute of Gas Technology. Implantable fuel cell. 3,837,922, Cl. 136-86.00r.
NGK Insulators, Ltd.: *See—*
Sugimoto, Toshio; Uema, Toru; and Takeuchi, Isamu, 3,837,808.
Nichols, Donald S.: *See—*
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Nickel, Hubertus: *See—*
Gyarmati, Erno; and Nickel, Hubertus, 3,838,184.
Nickerson, Douglas W., to Motorola, Inc. Band limited FM detector. 3,838,349, Cl. 329-103.000.
Nickerson, Russell J.: *See—*
Petrides, Petros T.; Nickerson, Russell J.; Cordeiro, Rodney R.; and Dodson, James S., Jr., 3,838,244.
Nicolas, Louis; and Dick, Richard, to ANVAR-Agence Nationale de Valorisation de la Recherche. Diaphragm for inverse osmosis and method of making same. 3,837,500, Cl. 210-490.000.
Nicollian, Edward Haig: *See—*
Berglund, Carl Neil; Nicollian, Edward Haig; Tompsett, Michael Francis; and Waggener, Herbert Atkin, 3,837,907
Niebauer, Kenneth L.: *See—*
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Niemand, Emil: *See—*
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Niggemann, Johannes: *See—*
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Nilson, Carl-Goran; and Olsson, Sven Olov, to Alfa-Laval AB. Locking device for machine frame cover. 3,837,567, Cl. 233-1.00b.
Nilsson, Rune, to AB Linde International. Brake operating mechanisms. 3,837,446, Cl. 188-329.000.
Nippon Cloth Industry Co. Ltd.: *See—*
Kuwagaki, Akira; and Takenaka, Sadao, 3,837,652.
Nippon Electric Company, Limited: *See—*
Kurokawa, Teruhisa, 3,838,364.
Otsuka, Hiroaki; Manabe, Norihisa; and Konishi, Tatsuo, 3,838,446.
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Nippon Hoso Kyokai: *See—*
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Nippon Kohan Kabushiki Kaisha: *See—*
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Nippon Piston Ring Co., Ltd.: *See—*
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Nippon Tensai Seito Kabushiki Kaisha: *See—*
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Nishimura, Tadashi; Nakayama, Yoshifumi; and Yamashita, Shigeji, to Toray Industries, Inc. Grass like pile product. 3,837,980, Cl. 161-21.000.
Nissan Motor Company: *See—*
Nagazumi, Yasuo; Hosaka, Tokuichiro; and Maeda, Kohei, 3,837,669.
Nitro Nobel AB: *See—*
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Nitto Boseki Co., Ltd.: *See—*
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Noll, Heinrich A. Sifters for grain and chemical industries. 3,837,483, Cl. 209-30.000.
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Kanij, Johannes B. W.; Noothout, Arend J.; and Hermans, Marie E. A., 3,838,062.

Norca Machinery Corporation: *See—*
Fedele, Franco, 3,837,295.

Nordgren, Hans Elov. Method of securing fittings or plates onto containers or container portions and a machine for carrying out the method. 3,837,069, Cl. 29-432.100.

Norholm, Olav, to Aktieselskabet Laur. Knudsen Elektricitets Selskab. Electric fuses. 3,838,376, Cl. 337-296.000.

Norma Messtechnik Gesellschaft m.b.H.: *See—*
Wehrmann, Wolfgang, 3,838,413.

Northern Electric Company Limited: *See—*
Brown, Anthony Kevin Dale, 3,838,416.
Laing, Graham Sterling; Morrell, Ronald Joseph; and Gumb, Bev. William (said Gumb assor. to), 3,838,232.

Norton Company: *See—*
Weaver, Gerald Q., 3,837,871.

Norton, Frederick H., to American Optical Company, mesne. Multifiber optical components. 3,837,727, Cl. 350-96.00b.

Norton, James R.; and Schmalzbauer, Herbert F., to Xerox Corporation. Stripper finger with air cushion. 3,837,640, Cl. 271-174.000.

Nosaka, Kunishi: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Nosaka, Kunishi, 3,838,221.

Nowak, Herbert: *See—*
Pohlke, Rolf; Jonas, Rochus; Mehrhof, Werner; Schlier, Hans-Jochen; Becker, Karl Heinz; Nowak, Herbert; and Simane, Zdenek, 3,838,147.

Nozaki, Yoshiyuki, to Mitsubishi Seiko Kabushiki Kaisha. Balance using a beam type load cell. 3,837,416, Cl. 177-196.000.

NSM Apparatebau GmbH Kommanditgesellschaft: *See—*
Kortenhaus, Dieter, 3,838,259.

Nudinger, Gunter; Collin, Heinrich; and Moosburger, Hans, to Bayerische Berg-, Hutten- und Salzwerke AG. Process for connecting expiring first web to beginning second web. 3,837,954, Cl. 156-159.000.

Nuerrenbach, Axel: *See—*
Fischer, Martin; Wiersdorff, Walter-Wielant; Nuerrenbach, Axel; Horn, Dieter; and Feichtmayr, Franz, 3,838,029.

Nunan, Craig S.: *See—*
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Nutt, David Walter: *See—*
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Oberg, Nathan: *See—*
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Obergfell, Allen R.: *See—*
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O'Brien, Joseph: *See—*
Brown, Paul; and O'Brien, Joseph, 3,837,376.

O'Brien, Willaim R., 40% to Feury, Thomas J. and 20% to Sheehan, Conrad P. Partitioning system. 3,837,128, Cl. 52-241.000.

Oceaneering International, Inc.: *See—*
Hughes, Michael; and Fridge, David S., 3,838,434.

Ochiai, Yoshiki; and Sakane, Kazuhiro, to Toyoda Koki Kabushiki Kaisha. Automatic tool change apparatus. 3,837,070, Cl. 29-568.000.

O'Connor, William Harvey, III, to Black and Decker Manufacturing Company, The. Brush holder for portable hand tools. 3,838,300, Cl. 310-239.000.

Odier, Jean, to Societe Anonyme Francaise Du Ferodo. Longitudinal positioning stop for fixed station automobile vehicle test beds. 3,837,221, Cl. 73-124.000.

Odier, Marc. Game with reversible pieces. 3,837,651, Cl. 273-137.00d.

O'Fallon Investment Company: *See—*
Mundy, William L., 3,837,240.

Office Communications, Inc.: *See—*
Anglin, Noah L.; and Machamer, Roy J., 3,837,457.

Offshore Technology Coporation: *See—*
Biewer, Frank N., 3,837,309.

Ogawa, Akira: *See—*
Shiba, Keisuke; Sato, Akira; and Ogawa, Akira, 3,837,862.

Ogihara, Masuo; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Opening device for an electronic shutter. 3,838,436, Cl. 354-259.000.

Ogiso, Mitsutoshi; Hosoe, Kazuya; Takahashi, Kiyoshi; and Itani, Takashi, to Canon Kabushiki Kaisha. Camera and microphone combination having a variable directional characteristic in accordance with a zoom lens control. 3,837,736, Cl. 352-12.000.

Ogland, Jon W., to Westinghouse Electric Corporation. Direct view storage tube having a lateral field neutralizing electrode adjacent the storage grid. 3,838,309, Cl. 315-12.000.

O'Hara, Eugene F., to Management Programs, Inc. Perceptual measuring apparatus and method. 3,837,095, Cl. 35-22.00r.

Ohio State University Research Foundation, The: *See—*
Mailer, Hugh, 3,837,423.

Ohlsson, Fall Johan Olof William: *See—*
Lindstrom, Jan Nils; Jonsson, Bo Folke; and Ohlsson, Fall Johan Olof William, 3,837,896.

Ohmstede, Gene E., to Ohmstede Machine Works, Inc. Machine for dismantling tube bundles. 3,837,062, Cl. 29-200.00d.

Ohmstede Machine Works, Inc.: *See—*
Ohmstede, Gene E., 3,837,062.

Ohta, Shuji, to Toyota Automatic Loom Works, Ltd. Industrial truck. 3,837,515, Cl. 214-730.000.

Okada, Akira: *See—*
Inagaki, Michio; and Okada, Akira, 3,838,243.

Okamoto, Goro: *See—*
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Okamura, Susumu: *See—*
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O'Konski, George J.: *See—*
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Olin Corporation: *See—*
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Pryor, Michael J.; and Popplewell, James M., 3,837,895.

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Bettini, Giuseppe; and Romano, Carlo, 3,838,459.
Bretti, Franco; and Valle, Franco, 3,837,458.
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Olson, Donald L.: *See—*
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Olsson, Sven Olov: *See—*
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Omachi, Toshio. Method for preventing living things such as microorganisms in the sea from sticking to submarine equipment by spraying with fresh water. 3,837,916, Cl. 134-34.000.

Omnium de Prospective Industrielle: *See—*
Lefebvre, Michel S. M.; and Hennion, Jean-Claude M. L., 3,837,186.

O.M.P. Officine Meccaniche Ponti & C. s.n.c.: *See—*
Zaramella, Gian Carlo, 3,837,204.

Onderka, Georg, to Deggendorfer Werft und Eisenbau G.m.b.H. Hydraulic control mechanism for hopper barges. 3,837,312, Cl. 114-29.000.

Oosterling, Pieter Adriaan: *See—*
DeKoning, Cornelis Jan; and Oosterling, Pieter Adriaan, 3,837,407.

Opittek, Eugene W.: *See—*
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Organisation Europeenne de Recherches Spatiales: *See—*
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Orlando, Anthony W.: *See—*
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O'Rourke, John F.: *See—*
Johnson, Thomas J.; and O'Rourke, John F., 3,837,124.

Orsoff, Eli, to Continental Hair Products, Inc. Hair dryer nozzles. 3,837,581, Cl. 239-289.000.

Ortho Pharmaceutical Corporation: *See—*
Karmas, George, 3,838,172.

Orton, Edward, Jr., Ceramic Foundation, The: *See—*
Vukovich, Milan Jr., 3,838,377.

Osakeyhtio, A. Ahlstrom: *See—*
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Osterreichische Stickstoffwerke Aktiengesellschaft: *See—*
Weinrotter, Fredinand; Muller, Walter; Krulla, Wilfried; and Stern, Gerhard, 3,837,835.

Osthoff, Walter; Ebbinghaus, Rainer; and Hohensester, Otmar. Apparatus for singeing textile fabrics. 3,837,051, Cl. 26-3.000.

Otis Engineering Corporation: *See—*
Yonker, John H., 3,837,398.

Otsuka, Hiroaki; Manabe, Norihisa; and Konishi, Tatsuo, to Nippon Hoso Kyokai and Nippon Electric Company, Limited. Multi layer magnetic recording technique. 3,838,446, Cl. 360-19.000.

Otten, Hans; Heinze, Helmut; and Muller, Heinz, to U.S. Philips Corporation. Automatic sorting device. 3,837,485, Cl. 209-74.00r.

Otto, C., Dr., & Comp. G.m.b.H.: *See—*
Messerschmidt, Otto, 3,838,017.

Over, William Roderick: *See—*
Gress, Paul William; and Over, William Roderick, 3,837,211.

Overstreet, Charles L.: *See—*
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Owen, James E.: *See—*
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Vogt, John W.; and Owen, James E., 3,838,092.

Owen, Michael: *See—*
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Owens-Corning Fiberglas Corporation: *See—*
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Marzocchi, Alfred, 3,837,897.
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Owens-Illinois, Inc.: *See—*
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Busdiecker, Robert A., 3,837,978.
Damm, David A.; and Scherf, Gerald F., 3,838,321.
Dietz, Earl D.; and Wengert, Paul R., 3,837,828.
Mills, David E.; and Sorbie, Thomas B., 3,837,468.
Moore, Ronald H., 3,837,831.

Owston, William J., to Lord Corporation. Method and composition for improving adhesion between adhesives and polyester or thermoplastic substrates. 3,838,093, Cl. 260-33.8ub.
Packard Instrument Company, Inc.: *See—*
Tarkkanen, Viekko, 3,837,807.
Page, Charles E.: *See—*
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Palm, Theodore O.: *See—*
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Palmer, Ronald S., to International Business Machines Corporation. Track seeking and following servo system. 3,838,457, Cl. 360-78.000.
Palovits, Pal; Laar, Tiborne; and Mucsy, Endre, to Femipari Kutato Intezet. Casting apparatus with slidably mounted branch runners. 3,837,614, Cl. 249-108.000.
Pampus, Gottfried: *See—*
Schnorin, Hildegard; Pampus, Gottfried; and Mayer-Mader, Rudolf, 3,838,086.
Panossian, Jacques: *See—*
Ertaud, Andre; Panossian, Jacques; and Carbonnel, Henri, 3,837,763.
Papaieck, Robert J., to Cutler-Hammer, Inc. Binary coded digital frequency synthesis. 3,838,355, Cl. 331-39.000.
Paradis, Eugene: *See—*
Allaire, Eugene Joseph; and Paradis, Eugene, 3,837,031.
Park, Jack H.: *See—*
Allen, Joseph C.; Tate, Jack F.; and Park, Jack H., 3,837,399.
Park, Yong S., to Zenith Radio Corporation. Lighthouse exposure system providing corrected radiant energy distribution. 3,838,432, Cl. 354-1.000.
Park-Ohio Industries, Inc.: *See—*
Pfaffmann, George D.; and Hammond, Michael R., 3,837,934.
Parke, Davis & Company: *See—*
Prout, Wesley C., 3,837,010.
Parker, Reid T. Apparatus for package molding roofing asphalt. 3,837,778, Cl. 425-256.000.
Parker, William L.; and Johnson, Francis, to Dow Chemical Company, The. Alpha-methylenation of gamma-butyrolactones. 3,838,168, Cl. 260-326.360.
Parramore, Maurice: *See—*
Needham, Victor; and Parramore, Maurice, 3,838,028.
Pars, Harry George; and Razdan, Raj Kumar, to Sharps Associates. Dialkylamino ethers of benzopyranopyridines. 3,838,158, Cl. 260-296.00h.
Parsons, William L., Jr.: *See—*
Malloy, Edward D.; and Parsons, William L., Jr., 3,837,620.
Pasqualini, Ugo. Artificial alloplastic roots, for supporting and retaining dentures. 3,837,080, Cl. 32-10.00a.
Passarella, Michael T.: *See—*
Farnam, Robert G.; and Passarella, Michael T., 3,837,657.
Patel, Ambalal T.: *See—*
Siedband, Melvin P.; James, Jack L.; and Patel, Ambalal T., 3,838,285.
Patel, Ramesh U.; and Aleshire, Rex A., to National Cash Register Company, The. Printing ribbon indexing system. 3,837,462, Cl. 197-151.000.
Patience, Donald: *See—*
Chesky, Sheldon R.; Patience, Donald; and Hartigan, Edward G., 3,837,338.
Patience, Donald, to Kendall Company, The. Laparotomy sponges. 3,837,344, Cl. 128-296.000.
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, to Institut Elektrosvarki I.M.E.O. Patona. Method for electroslag remelting with slag introduction and equalized plural electrode remelting. 3,838,200, Cl. 13-9.000.
Patton, David S.: *See—*
Hamanaka, Ernest S.; and Patton, David S., 3,838,153.
Paulhamus, Joseph L.: *See—*
Stratienko, Andrew; Kornsey, Robert J.; and Paulhamus, Joseph L., 3,837,316.
Paulsen, Charles, to Ivan Servall, Inc. Centrifuge test tube holder. 3,837,633, Cl. 269-128.000.
Pavena AG.: *See—*
Naegeli, Werner, 3,837,998.
Payne, Kenneth Gordon: *See—*
Ansell, James Joseph; and Payne, Kenneth Gordon, 3,837,962.
Pecoraro, George A.; McConnell, John F.; and Knavish, Leonard A., to PPG Industries, Inc. Apparatus for making float glass. 3,837,832, Cl. 65-182.00r.
Peil, William, to General Electric Company. Automatic gain control system and amplifier of controllable gain. 3,838,210, Cl. 178-7.30r.
Peka-Fahrzeugbau Eberhardt KG: *See—*
Dickmann, Thomas, 3,837,679.
Pellico, Michael A., to Denton Industries, Inc. Settable dental compositions. 3,837,865, Cl. 106-35.000.
Peloschek, Hans Peter: *See—*
Van Der Laan, Karel; and Peloschek, Hans Peter, 3,837,910.
Pelouch, James J. Vehicle lift. 3,837,435, Cl. 187-8.720.
Pelster, Edwin J.: *See—*
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Pelto, Eino W. Magnetic pin lock. 3,837,195, Cl. 70-276.000.
Pennington, Dale H.: *See—*
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Pentapco, Inc.: *See—*
Snyder, Benjamin L., 3,837,530.
Pepe, Anthony Enrico, to Stauffer Chemical Company, mesne. Self-extinguishing organopolysiloxane composition. 3,838,089, Cl. 260-33.8sb.
Perri, Giulio Cesare: *See—*
Viterbo, Rene; Brancaccio, Giovanni; and Perri, Giulio Cesare, 3,838,123.
Perry, Walter Merton. Container closure with opening indicators. 3,837,519, Cl. 215-7.000.
Perschbacher, Otto; Hunke, Friedrich; and Glaab, Berthold, to Automatik Apparate-Machinenbau H. Hench GmbH. Apparatus for granulating strands or bands of material, especially synthetic materials. 3,837,586, Cl. 241-223.000.
Persson, Ake; and Hedstrom, Folke, to SWE-PE-DENT AB, mesne. Apparatuses for illuminating an operating zone which is observed by means of an observation mirror. 3,838,265, Cl. 240-1.0lp.
Persson, Anders. Device for the protection of the eyes and face. 3,837,005, Cl. 2-10.000.
Peter, Joseph E.: *See—*
Sumner, Paul E.; and Peter, Joseph E., 3,837,890.
Peters, Winslow W.: *See—*
Benoit, Robert L.; Peters, Winslow W.; and Morgan, Joseph, 3,837,755.
Peterson, Francis C., to Hager, C., & Sons Hinge Manufacturing Company. Hinge through which an electrical circuit is completed with means to interrupt the circuit. 3,838,234, Cl. 200-61.700.
Peterson, Henry Embry, to Du Pont de Nemours, E. I., and Company. Filler piece for double drum drier. 3,837,089, Cl. 34-17.000.
Peterson, John R., 20% to Lee, Raymond, Organization, Inc., The. Multiple windmill. 3,837,112, Cl. 46-58.000.
Peterson, Merle H., to Massey-Ferguson, Inc. Hydrostatic transmission control. 3,837,235, Cl. 74-531.000.
Petrides, Petros T.; Nickerson, Russell J.; Cordeiro, Rodney R.; and Dodson, James S., Jr., to General Dynamics Corporation. Electrical system for automatic arc welding. 3,838,244, Cl. 219-131.00f.
Petro-Tex Chemical Corporation: *See—*
Turner, Nathan L., 3,838,141.
Pettigrew, Michel J., to Atomic Energy of Canada Limited. Tube bundle assembly. 3,837,397, Cl. 165-162.000.
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Hamanaka, Ernest S.; and Patton, David S., 3,838,153.
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Henderson, Eulas W., 3,837,090.
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Pianka, Max, to Murphy Chemical Limited. Fungicidal piperazine derivatives. 3,838,129, Cl. 260-268.00r.
Pielkenrood, Jacob, to Fielkenrood-Vinitex N.V. Separation device. 3,837,501, Cl. 210-522.000.
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Pool, Horace E. De impactor device. 3,837,082, Cl. 32-64.000.
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Potzl, Friedrich, to U.S. Philips Corporation. Junction circulator having curved conductors on opposite sides of printed circuit board. 3,838,360, Cl. 333-1.100.
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Prendergast, John F.; Chrapkowski, Ralph K.; and Lang, George R., to General Electric Company. X-ray table with self-storing tomographic coupling bar. 3,838,286, Cl. 250-445.000.
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Provan, Ducan Whyte, to Glynwed Foundries Limited. Method of and apparatus for forming a sand mould for use in the manufacture of a cast iron pipe. 3,837,389, Cl. 164-33.000.
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Rakucewicz, John J., to Kinematics and Controls Corporation. Article delivery systems for vending machines. 3,837,528, Cl. 221-114.000.
Raley, Garland E., to Ethyl Corporation. Extruded plastic film method and apparatus for the manufacture thereof. 3,837,773, Cl. 425-131.000.
Randall, David I.; and Wynn, Robert W., to GAF Corporation. 2-Chloroethyl phosphonondithioate esters. 3,838,180, Cl. 260-961.000.
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Rathmell, Richard K. Crossed double layer shoe upper. 3,837,098, Cl. 36-2.5al.

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Rau, Hans; Wegener, Joachim Rolf; and Greene, Peter Townsend, to U.S. Philips Corporation. Method of preparing iron powder suitable for magnetic recording. 3,837,839, Cl. 75-.5aa.

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Reinecke, Erich; Klatt, Alfred; Weise, Lutz; and Maisold, Karl-Heinz, to Westinghouse Bremsen-und Apparatebau GmbH. Anti-skid apparatus for wheels. 3,837,710, Cl. 303-21.00f.

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Rendessy, William L. Sway control device for trailer hitches. 3,837,676, Cl. 280-446.00b.

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Rochet, Jean, to Societe Anonyme dite: Jean Rochet S. A. Method for shaping filament supports of a minature signal lamp. 3,837,371, Cl. 140-71.500.

Rockwell, Frank H.; and Bottum, Edward W., to Refrigeration Research, Inc. Suction accumulator. 3,837,177, Cl. 62-503.000.

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Ronen, Ram Shaul, to RCA Corporation. Method of simultaneously making a SIGFET and a MOSFET. 3,837,071, Cl. 29-571.000.

Roos, Ernst: *See—*
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Rosa, John, to Westinghouse Electric Corporation. Arrangement and method for converting electrical power without external supply of reactive power requirements. 3,838,330, Cl. 321-5.000.

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Roseberg, Harry H. Apparatus for handling and countring pills and the like. 3,837,139, Cl. 53-59.00r.

Rosenkranz, Jules J., to Lafayette Brass Manufacturing Co., Inc. Water sprinkler device. 3,837,576, Cl. 239-230.000.

Ross, Charles W., to Leeds & Northrup Company. Control system for minimizing both the control error and the integral of the control error. 3,838,257, Cl. 235-151.100.

Ross, John M. Fountain brush. 3,837,751, Cl. 401-290.000.

Ross, Lee F.; Wilkinson, James E.; Craig, Fred A.; and Hudson, Allan M., to Thiokol Corporation, mesne. Apparatus for molding rigid product from synthetic resinous material. 3,837,774, Cl. 425-144.000.

Ross, Sidney A. System and method for controlling the nervous system of a living organism. 3,837,331, Cl. 128-1.00c.

Rosser, David Arthur: *See—*
Barnes, Andrew Nicholas Morrison; Chen, Wai Ming; Rickards, Tudor; Rosser, David Arthur; and Thurairajan, Ponnuswamy, 3,838,057.

Rossi, Irving. Continuous casting apparatus. 3,837,391, Cl. 164-282.000.

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Rousseau, Denis Lawrence; and Sinclair, William Robert, to Bell Telephone Laboratories, Incorporated. Pattern delineation method and product so produced. 3,837,855, Cl. 96-35.000.

Rowa, Elof Hjalmar: *See—*
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Rowenta-Werke GmbH: *See—*
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Royce, William G., to Honeywell Inc. Recording amplifier for bias-type magnetic recording. 3,838,452, Cl. 360-66.000.

Royer, Rene R.; Demerseman, Pierre G.; Rene, Loic J.; and Cavier, Raymond E., to Agence Nationale de Valorisation de la Recherche. 2-Nitro-5 or 6 or 7-methoxy benzofuran. 3,838,173, Cl. 260-346.20r.

Rubin, Marion Sturm. Box structure. 3,837,561, Cl. 229-23.0bt.

Ruckebier, Werner; and Schorpp, Hermann, to Licentia Patent-Verwaltungs-GmbH. Mail sorting system. 3,837,484, Cl. 209-73.000.

Rudnick, Alfred: *See—*
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Rudy, Thomas P.: *See—*
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Runyan, Walter R.: *See—*
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Ruskin, Henry, to Swingline Inc. Embossing tool. 3,837,456, Cl. 197-6.700.

Russ, Paul E., Sr., to Gates Rubber Company, The. Endless track suspension system. 3,837,714, Cl. 305-24.000.

Rust, Edgar C., Jr., to Crompton & Knowles Corporation. Ultrasonic pattern welding apparatus. 3,837,977, Cl. 156-580.000.

Ruth, Elmer L., to Appleton Machine Company. Core straightener assembly. 3,837,203, Cl. 72-110.000.

Ryuter, Ivar Eystein: *See—*
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Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
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Sagar, Joseph, to International Telephone and Telegraph Corporation. Retention system for electrical contacts. 3,838,382, Cl. 339-59.00r.

Sahatjian, Edward; and Maurer, Gottfried. Automatic spray dispenser with integrated test apparatus. 3,837,532, Cl. 222-70.000.

Saida, Seishiro: *See—*
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Sakazume Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; and Kanbe, Masaru, to Konishiroku Photo Industry Co., Ltd. Process for preparing light-sensitive silver halide photographic materials. 3,837,863, Cl. 96-130.000.

Sakhnovsky, Arkady Zinovievich: *See—*
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Saucy, Gabriel; and Scott, John William, to Hoffman-La Roche Inc. Substituted isoxazole derivatives as steroid intermediates. 3,838,163, Cl. 260-307.00h.

Sauer, David Allen, to Du Pont de Nemours, E. I., and Company. Polytetrafluoroethylene coatings for containing water soluble polyhydrolyzable compound glass fabrics. 3,838,082, Cl. 260-29.60f.

Sauer, Rudolf, to Bosch, Robert, G.m.b.H. Means for indicating the rate of air flow in the intake manifold of an internal combustion engine. 3,837,321, Cl. 123-32.0ea.

Saunders Archery Co.,: *See—*
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Saunders, Charles A.; and Saunders, Eugene Francis, to Saunders Archery Co.,. Bowstring silencer for archery bow. 3,837,327, Cl. 124-30.00a.

Saunders, Eugene Francis: *See—*
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Sawyer, Willard H.; and Robson, Harry E., to Esso Research and Engineering Company. Process for cracking hydrocarbon feeds with chrysotile compositions. 3,838,041, Cl. 208-120.000.

Schaar, Charles H., to Colgate-Palmolive Company, mesne. Method of making a disposable diaper having an integral container. 3,837,955, Cl. 156-211.000.

Schaffer, James L., 1/2 to Marlo, John A. Collapsible grill. 3,837,328, Cl. 126-29.000.

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Schaper, Willi: *See—*
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Schelkmann, Wilhelm. Envelope closure. 3,837,385, Cl. 150-54.00b.

Schenectady Chemicals, Inc.: *See—*
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Schenker, Erhard, to Sandoz Ltd.; a/k/a Sandoz A.G. 6-Substituted-5,6,7,8-tetrahydro-3-hydrazino (substituted hydrazino) pyrido (4,3-c) pyridazines. 3,838,125, Cl. 260-250.00a.

Schera, Enos L., Jr. Tubular socket wrench for engaging and rotating threaded members. 3,837,244, Cl. 81-64.000.

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Schilz, Wolfram, to U.S. Philips Corporation. Planar phase shifter for use in the microwave range. 3,838,363, Cl. 333-24.100.

Schindler, Herbert; and Ware, Willard O., to M.M.S. Limited, mesne. Plural temperature level fluid heating system. 3,837,016, Cl. 4-172.170.

Schindler, Herbert; and Ware, Willard O., to M.M.S. Limited, mesne. Gas burner. 3,837,789, Cl. 431-354.000.

Schirmer, Kenneth L., to TRW Inc. Drilling machine. 3,837,121, Cl. 51-56.000.

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Schmidt, Robert Theodore; and Mulka, John Daniel, to General Electric Company. Antenna assembly for a capacitance-responsive safety device. 3,838,318, Cl. 317-246.000.

Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Nosaka, Kunishi, said Schmidt, Gabbard, Husted and Maillet assors. to Communications Satellite Corporation and said Nosaka assor. to Kokusai Denshin Denwa Co., Ltd. TDMA satellte communications system having special reference bursts. 3,838,221, Cl. 179-15.0bs.

Schneider, David T., to Sperry Rand Corporation. Asynchronous shift cell. 3,838,345, Cl. 328-37.000.

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Schoch, Hans; and Herzog, Josef, to Sulzer Brothers Ltd. and Hayek Engineering Ltd. Apparatus and process for preheating scrap iron. 3,837,791, Cl. 432-21.000.

Schoots, Peter J., to Lurex N.V. Non-Laminated, non-dyeable metallic yarn. 3,837,893, Cl. 117-68.000.

Schorpp, Hermann: *See—*
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Schramm, Arthur G. Elevatable trailer mechanism. 3,837,665, Cl. 280-43.180.

Schregenberger, Alex J., to Midland-Ross Corporation. Web conveying and treating method and apparatus. 3,837,551, Cl. 226-97.000.

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Schubert, James R.; and Brown, Omar L. Easy opening container wall. 3,837,524, Cl. 220-54.000.

Schuierer, Manfred, to Bruckner-Apparatebau Michelstadt GmbH. Apparatus for wet treatment and subsequent drying of a textile web. 3,837,188, Cl. 68-20.000.

Schuldt, Theodore J., Jr.: *See—*
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Schuler, Hermann; and Zeller, Bruno, to Gebruder Boehringer Gesellschaft mit beschrankter Haftung. Bed of a lathe. 3,837,245, Cl. 82-32.000.

Schultz, Elmer L.; Tribuno, Robert F.; Hall, John C.; and Schuldt, Theodore J., Jr., to Collins Radio Company. Lateral axis rollout, go-around, takeoff control for aircraft. 3,837,603, Cl. 244-77.00a.

Schultz, Ward E.; and Smith, Harry D., Jr., to Texaco Inc. Determination of borehole washout by use of inelastic neutron scattering gamma ray measurements. 3,838,279, Cl. 250-270.000.

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Schuricht, Henry A., to Hydromation Filter Company. Method and apparatus for conveying workpieces. 3,837,452, Cl. 193-12.000.

Schuster, Samuel J. Plastic bag-making machine. 3,837,972, Cl. 156-466.000.

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Seliger, Robert L.; and Fleming, Wayne P., to United States of America, Navy. Replaceable electrode surfaces for high field electrostatic lenses. 3,838,305, Cl. 313-237.000.
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Sengewald, Karl H. Dispenser for carrying bags or the like. 3,837,549, Cl. 225-11.000.
Sernovitz, Morton A. Lugs and cart therefor. 3,837,667, Cl. 280-47.340.
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Seybolt, Alan U., to General Electric Company. Diffusion-coating of nickel-base superalloy articles. 3,837,901, Cl. 117-107.20p.
Seymore, Ulysee. Washer/squeegee. 3,837,747, Cl. 401-25.000.
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Sherman, Roger M. Adjustable valve for use on irrigation pipes. 3,837,619, Cl. 251-145.000.
Sherwood Refractories, Inc.: *See—*
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Shewchuk, John. Coupling for break away pole bases. 3,837,752, Cl. 403-2.000.
Shiba, Keisuke; Sato, Akira; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,837,862, Cl. 96-126.000.
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Yasumori, Eiji; and Tanno, Naoichiro, 3,837,055.
Shimmel, Robert M., to Uniroyal, Inc. Adhesion of textiles to rubber. 3,837,993, Cl. 161-92.000.
Shindo, Minoru; Kakimoto, Morio; and Nagano, Hiroyuki, to Chugai Seiyaku Kabushiki Kaisha. 1,4,5-Benzotriazocine derivatives. 3,838,117, Cl. 260-239.30b.
Shinetsu Chemical Company: *See—*
Mayuzumi, Tetsuya; and Inoue, Yoshio, 3,837,876.
Shinohara Seiki Kabushiki Kaisha: *See—*
Shinohara, Yoshimi, 3,837,216.
Shinohara, Yoshimi, to Shinohara Seiki Kabushiki Kaisha. Method and apparatus for measuring the concentration of solid contaminants contained in liquids. 3,837,216, Cl. 73-61.00r.
Shinomura, Toshihiko; and Uemura, Hiroshi. Waxy composition for preventing rubbery substance from ozone deterioration. 3,838,080, Cl. 260-28.50b.
Shiozawa, Kaoru: *See—*
Hirose, Kiyoshi; Shiozawa, Kaoru; and Saito, Yuzi, 3,837,061.
Shirai, Kazunari: *See—*
Maeda, Kazuo; and Shirai, Kazunari, 3,837,935.
Shirazawa, Takashi: *See—*
Inoue, Takeo; Shirazawa, Takashi; Nakazaki, Tadashi; and Okamoto, Goro, 3,838,373.
Shishido, Toshimasa; and Atsumi, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Carburetor choke. 3,837,322, Cl. 123-75.00b.
Shmuel, Dan Ben, to Woodside Construction Corporation. Method and apparatus for processing fabrics in rope-like form. 3,837,801, Cl. 8-151.100.
Shoch, Clinto W.; and Harmon, George Lamar, to Martin Marietta Corporation. Shiftable scanner aperture. 3,837,733, Cl. 350-272.000.
Shoe and Allied Trades Research Association, The: *See—*
Lockwood, Charles Alfred; Goffe, Frederick William Frank; and Julian, Ronald, 3,837,025.
Shore, David Teignmouth; and Starkie, Granville Lewis, to A. P. V. Company Limited, The. Heat treatment of flowable solids. 3,837,271, Cl. 99-468.000.
Shortes, Samuel R.: *See—*
Pollack, Gordon P.; Fish, John G.; and Shortes, Samuel R., 3,837,873.
Shortt, Brian A.: *See—*
Cohen, Leonard D.; Shortt, Brian A.; and Urban, Michael J., 3,838,406.
Shuki, Albert R.; and Smola, Dennis E., to Standard Oil Company, The. Manufacture of unsaturated polyesters. 3,838,106, Cl. 260-75.00m.
Shum, Yick-Mow: *See—*
Allen, Joseph C.; and Shum, Yick-Mow, 3,837,401.
Sicard, Marcel Clarence. Shelf brackets. 3,837,605, Cl. 248-235.000.
Siddall, John B.: *See—*
Henrick, Clive A.; and Siddall, John B., 3,838,176.
Sidorenko, Mikhail Nikolaevich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovih; Altgauzen, Andrei

Pavlovich; Nizolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladmir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,838,200.

Siedband, Melvin P.; James, Jack L.; and Patel, Ambalal T., to CGR Medical Corporation. X-ray tube anode protective circuit. 3,838,285, Cl. 250-413.000.

Siegmund, Walter P., to American Optical Corporation. Drawing optical fiber under superatmospheric pressure. 3,837,824, Cl. 65-4.000.

Siemens Aktiengesellschaft: *See—*
Fritz, Robert; and Simon, Werner, 3,838,231.
Graf, Peter; and Roess, Dieter, 3,838,401.
Haeusler, Jochen; Wagnerberger, Wolfgang; and Appiah, Michael, 3,838,263.
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Siemens-Electrogerate GmbH: *See—*
Detterbeck, Heinrich, 3,838,249.

Signetics Corporation: *See—*
Dao, Tich T., 3,838,393.
Irving, Stephen M.; and Lemons, Kyle E., 3,837,856.

Silbersmith, Donald Jack; and Strain, Robert Joseph, to Bell Telephone Laboratories, Incorporated. Detection, inversion, and regeneration in charge transfer apparatus. 3,838,438, Cl. 357-24.000.

Sill, Arthur D., to Richardson-Merrell Inc. Substituted 9,10-dihydroanthracenes. 3,838,177, Cl. 260-351.000.

Simane, Zdenek: *See—*
Pohlke, Rolf; Jonas, Rochus; Mehrhof, Werner; Schlier, Hans-Jochen; Becker, Karl Heinz; Nowak, Herbert; and Simane, Zdenek, 3,838,147.

Simmons, David M., Jr.: *See—*
Evans, Robert W.; and Simmons, David M., Jr., 3,837,785.

Simon, Edward J. Dispenser holder. 3,837,608, Cl. 248-313.000.

Simon, Joseph A. Process for cold forming a metal tube with an inwardly thickened end. 3,837,205, Cl. 72-260.000.

Simon, Werner: *See—*
Fritz, Robert; and Simon, Werner, 3,838,231.

Simonian, John L.: *See—*
Zalewski, Edmund J.; Simonian, John L.; and Keating, John T., 3,838,088.

Simpson, William R., to Sandoz-Wander, Inc. 4-(4-(Hydroxy alkyl)-1-piperazino)-quinazoline benzoates. 3,838,127, Cl. 260-256.40q.

Sims, John C., Jr., to New England Research Associates, Inc. Method and system for digital recording. 3,838,449, Cl. 360-52.000.

Sinclair, William Robert: *See—*
Rousseau, Denis Lawrence; and Sinclair, William Robert, 3,837,855.

Singer, Company, The: *See—*
Goldfischer, Lester I., 3,838,424.
Naas, Hartley M.; Sutherland, Julian C.; and Nesbitt, Dale D., 3,838,250.
Stiles, John C.; and Albert, William C., 3,837,229.
Waibel, Helmut K., 3,837,461.

Sioux Steam Cleaner Corporation: *See—*
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Sjoberg, Enhorna Berndt Olof Harald: *See—*
Bamberg, Peter; and Sjoberg, Enhorna Berndt Olof Harald, 3,838,008.

Skil Corporation: *See—*
Consoli, Frank J.; Rebechini, Peter G.; and Beisch, Hanspeter E., 3,837,409.

Skinner, Eugene S.; Crist, Elmer E.; and Phelps, Louis D., to Beloit Corporation. Rotary steam seal for dryer drum. 3,837,658, Cl. 277-26.000.

Skolnik, Marvin B.: *See—*
Haberland, Peter H.; Lay, Frank M.; Murphy, Thomas J.; Skolnik, Marvin B.; Spencer, Oliver S.; Wagner, Peter R.; Whitaker, Howard L.; and Wilson, Donald M., 3,837,724.

Skrypnik, Ivan Timofeevich: *See—*
Dakhov, Mark Illarionovich; Nesterov, Pavel Petrovich; Semkin, Alexei Trofimovich; Alexeeva, Ljudmila Andreevna; Sakhnovsky, Arkady Zinovievich; Skrypnik, Ivan Timofeevich; Klimovsky, Lev Lvovich; and Miroshnichenko, Viktor Alexandrovich, 3,837,152.

Slaughter, Lomis, Jr., to Anderson, Greenwood, & Co. Check valve. 3,837,357, Cl. 137-554.000.

Slemmons, John Whit. Poster frame extrusion cutting guides. 3,837,253, Cl. 83-762.000.

Sluse, Guy; and Joannes, Gustave, to Solvay & Cie. Removing of worn coating from metal electrodes. 3,837,879, Cl. 117-2.00r.

Smallman, Robert Victor, to Imperial Chemical Industries Limited. Maleic anhydride copolymer. 3,838,113, Cl. 260-78.50r.

Smith, Edwin J.: *See—*
Austin, Lowell W.; Beale, Louis C., Jr.; and Smith, Edwin J., 3,838,024.

Smith, Frank R., Jr.; Di Salvo, Walter A.; and Kenney, Edward J., to Colgate-Palmolive Company. Manufacture of free flowing particulate detergent containing nonionic surface active compound. 3,838,072, Cl. 252-540.000.

Smith, Harry D., Jr.: *See—*
Schultz, Ward E.; and Smith, Harry D., Jr., 3,838,279.

Smith, James W.: *See—*
Jecmen, James M.; Jecmen, John J.; Riley, Robert; and Smith, James W., 3,838,245.

Smith, John William: *See—*
Durrant, Oliver W.; and Smith, John William, 3,837,167.

Smith, Russell D.: *See—*
Ebeling, Harold O.; and Smith, Russell D., 3,837,813.

Smith, Russell F., to ACF Industries, Incorporated. Filter assembly. 3,837,497, Cl. 210-349.000.

Smola, Dennis E.: *See—*
Shuki, Albert R.; and Smola, Dennis E., 3,838,106.

Smythe, Richard N. Knot tying apparatus. 3,837,691, Cl. 289-17.000.

Snam Progetti S.p.A.: *See—*
Arrigoni, Virgilio; Gaetani, Bruno; Marchesi, Gianfranco; and Zanoni, Gianfranco, 3,837,165.

Snaper, Alvin A. Means and method for depositing recrystallized ferroelectric material. 3,838,031, Cl. 204-192.000.

Snyder, Benjamin L., to Pentapco, Inc. Shank supply for button-sewing attachments. 3,837,530, Cl. 221-268.000.

Societe Anonyme Automobiles Citroen: *See—*
Grosseau, Albert, 3,837,712.

Societe Anonyme dite: Jean Rochet S. A.: *See—*
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Societe Anonyme Francaise Du Ferodo: *See—*
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Societe anonyme Surtec: *See—*
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Societe d'Etude Recherches et Constructions Electroniques: *See—*
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Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France: *See—*
Thominet, Michel Leon, 3,838,169.

Societe Francais d'Electrometallurgie: *See—*
Pons, Rene; Poyet, Marcel; Desbert, Jean; and Mena, Andre, 3,837,843.

Societe Lanniionnaise d'Electronique Sle-Citerel: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Camboulives, Andre Alphonse Mederic Leon; Jourdain, Gerard Ernest Andre; and Le Maout, Theophile Francois, 3,837,580.

Societe Nationale d'Etude et de Construction de Moteurs d'Eviation: *See—*
Camboulives, Andre Alphonse Mederic Leon; Chambon, Jean Francois; Jourdain, Gerard Ernest Andre; Le Maout, Theophile Francois; and Vandenbroucke, Roger Alfred Jules, 3,837,579.

Soderholm, Bert: *See—*
Morgenstern, Bodo; and Soderholm, Bert, 3,838,277.

Soiderer, Louis. Safety lock device for windows. 3,837,191, Cl. 70-90.000.

Sojka, Joseph E.: *See—*
Malmendier, Joseph W.; and Sojka, Joseph E., 3,837,866.

Sokolow, Nickolas N., to Plasti-Mac, Inc., mesne. Parison cutoff and sealing apparatus. 3,837,248, Cl. 83-375.000.

Solvay & Cie: *See—*
Sluse, Guy; and Joannes, Gustave, 3,837,879.

Sontag, John. Device for stripping forms from cast concrete structures. 3,837,613, Cl. 249-66.000.

Sopchak, Peter; and Guptill, Joel P., to Allied Chemical Corporation. Two-stage process for producing soda ash from trona. 3,838,189, Cl. 423-154.000.

Sorbie, Thomas B.: *See—*
Mills, David E.; and Sorbie, Thomas B., 3,837,468.

Sorice, Edward L.: *See—*
Barkley, George G.; Sorice, Edward L.; and Niebauer, Kenneth L., 3,837,058.

Soudijn, Willem; Van Wijngaarden, Ineke; and Janssen, Paul Adriaan Jan, to Janssen Pharmaceutica N.V. [(Thioxanthenyl)propyl]-piperidyl-benzimidazolinones. 3,838,118, Cl. 260-240.0tc.

Souillard, Georges J.; and Van Quaethoven, Frederic Francois. Lubricating compositions. 3,838,049, Cl. 252-32.70e.

Southard, James S., to Conn. C. G., Ltd. Organ pedal tone generator. 3,837,254, Cl. 84-1.010.

Souza, Augustine A., to Polygon Concepts, Inc. Cassette. 3,837,599, Cl. 242-199.000.

Spair, Herbert S.: *See—*
Lockwood, John E.; Spair, Herbert S.; and Spair, Richard A., Sr., 3,838,392.

Spair, Richard A., Sr.: *See—*
Lockwood, John E.; Spair, Herbert S.; and Spair, Richard A., Sr., 3,838,392.

Sparton Corporation: *See—*
Karr, Willis F., 3,837,300.

Spatz Corporation: *See—*
Spatz, Walter B., 3,837,749.

Spatz, Walter B., to Spatz Corporation. Cosmetic applicator. 3,837,749, Cl. 401-130.000.

Specialty Products Development Corporation: *See—*
Catanzarite, Vincent O., 3,837,942.

Speckhart, Bernard S.: *See—*
Weiss, Morton A.; and Speckhart, Bernard S., 3,837,609.

Spenadel, Lawrence; and Reed, John C., to Esso Research and Engineering Company. Ignitor containing polymeric $NF_2$-adducts. 3,837,940, Cl. 149-19.300.

Spencer, Oliver S.: *See—*

Haberland, Peter H.; Lay, Frank M.; Murphy, Thomas J.; Skolnik, Marvin B.; Spencer, Oliver S.; Wagner, Peter R.; Whitaker, Howard L.; and Wilson, Donald M., 3,837,724.

Spencer, Paul R., to Xerox Corporation. Control arrangement for transfer roll power supply. 3,837,741, Cl. 355-3.00r.

Spencer-Foote, Ronald. Multipurpose implement for performing destructive operations. 3,837,023, Cl. 7-8.10r.

Sperry Rand Corporation: *See—*
Di Matteo, Paul L., 3,838,423.
Kestigian, Michael, 3,838,053.
Maloney, William T.; and McMahon, Donald H., 3,838,403.
Phillips, Edwin R., 3,837,639.
Schneider, David T., 3,838,345.

Splan, Robert E. Fluid substance dispenser. 3,837,533, Cl. 222-94.000.

Sporck, Christian R., to National Semiconductor Corporation. Molding composition and molded product. 3,838,094, Cl. 260-37.0ep.

Sprague, Dennis R.: *See—*
Toledo, Emil; Sprague, Dennis R.; and Mocanu, Erick L., 3,838,025.

St. Clair, John Q.: *See—*
Martin, William A.; and St. Clair, John Q., 3,837,737.

St. Germain, Jean, to Baron, Andre H. Cable tension responsive switch. 3,838,235, Cl. 200-61.180.

Stabilus GmbH: *See—*
Wirges, Winfried, 3,837,355.

Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Cardenolide- and bufadienolide-3-[2',3'-didesoxyglycosides] and process for their preparation. 3,38,146, Cl. 260-210.500.

Stahlecker, Fritz, to Stahlecker, Wilhelm, GmbH. Spinning turbine. 3,837,154, Cl. 57-58.890.

Stahlecker, Wilhelm, GmbH.: *See—*
Stahlecker, Fritz, 3,837,154.

Stalker Corporation, The: *See—*
Stalker, Edward A., 3,837,760.

Stalker, Edward A., to Stalker Corporation, The. Turbine engine. 3,837,760, Cl. 415-181.000.

Standard Oil Company: *See—*
Ginsburgh, Irwin, 3,837,570.
Lovell, Lyle M., 3,838,066.

Standard Oil Company, The: *See—*
Shuki, Albert R.; and Smola, Dennis E., 3,838,106.

Star-Kist Foods, Inc.,: *See—*
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Stark, Donald E.: *See—*
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Starkie, Granville Lewis: *See—*
Shore, David Teignmouth; and Starkie, Granville Lewis, 3,837,271.

Starns, Robert M.: *See—*
Starns, Robert M.; and Witt, William W. (said Witt assor. to said), 3,837,255.

Starns, Robert M.; and Witt, William W., said Witt assor. to said Starns, Robert M. Portable guitar chorder. 3,837,255, Cl. 84-317.000.

Starogardzkie Zaklady Farmaceutyczne 'Polfa': *See—*
Ledochowski, Andrzej; and Stefanska, Barbara, 3,838,130.

Staufer, Dieter: *See—*
Martin, Wolfgang; Schwoerer, Ulrich; Bauer, Wolfgang; and Staufer, Dieter, 3,837,052.

Stauffer Chemical Company, mesne: *See—*
Pepe, Anthony Enrico, 3,838,089.

Stauffer, Norman L., to Honeywell Inc. Detecting apparatus for determining when image is in focus. 3,838,275, Cl. 250-204.000.

Ste Croix Foundry Ltd., mesne: *See—*
Taylor, Thomas B. Franklin, 3,837,683.

Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Hamel, Edward E., to Aerojet-General Corporation. Reactions between an organic diimide and an epoxy resin with a chromium III tricarboxylate catalyst. 3,838,101, Cl. 260-47.0en.

Stefanelli, William L. Cargo Handling system. 3,837,508, Cl. 214-83.220.

Stefanska, Barbara: *See—*
Ledochowski, Andrzej; and Stefanska, Barbara, 3,838,130.

Stehling, Norman P. Armor joint jack. 3,837,060, Cl. 29-200.00p.

Steigewald Strahltechnik G.m.b.H.: *See—*
Stolz, Heinz; and Koy, Johannes, 3,838,288.

Stephan, Hans: *See—*
Eggensperger, Heinz; Franzen, Volker; and Stephan, Hans, 3,838,100.

Sterling, Alice W. Math board. 3,837,096, Cl. 35-31.00d.

Sterling Drug Inc.: *See—*
Brundage, R. Pauline; and Lesher, George Y., 3,838,156.
Zalay, Andrew W.; and Bell, Malcolm R., 3,838,120.

Stern, Gerhard: *See—*
Weinrotter, Fredinand; Muller, Walter; Krulla, Wilfried; and Stern, Gerhard, 3,837,835.

Stern, Lionel. Method of making aluminum lead alloys. 3,837,902, Cl. 117-114.00r.

Stevenson, Bernard H. Sewage treatment apparatus. 3,837,494, Cl. 210-259.000.

Stewart, David S., to Zenith Radio Corporation. Video disk latching hub assembly. 3,838,460, Cl. 360-99.000.

Stewart-Decatur Security Systems, Incorporated: *See—*
Butt, Gerald L., 3,837,117.

Stier, Paul G.: *See—*
Modert, E. Lamar; and Stier, Paul G., 3,837,041.

Stiles, John C.; and Albert, William C., to Singer Company, The. Gimbal slip ring. 3,837,229, Cl. 74-5.00r.

Stinchcomb, William C. Time and distance indicating balancing toy. 3,837,644, Cl. 273-1.00r.

Stine, Laurence O.; and Hemler, Charles L., Jr., to Universal Oil Products Company. Fluid catalytic cracking process employing a catalyst heating zone. 3,838,036, Cl. 208-120.000.

Stipanuk, John M.: *See—*
Walter, John; Chambers, Worthy L.; and Stipanuk, John M., 3,837,587.

Stoltzfus, John E.: *See—*
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Stolz, Heinz; and Koy, Johannes, to Steigewald Strahltechnik G.m.b.H. Method for the remelt treatment of workpieces and the like. 3,838,288, Cl. 250-492.000.

Storage Technology Corporation: *See—*
Meadows, James Edward; Horsman, Larry Ray; and Carpentier, Anthony Louis, 3,838,400.

Storek, Jaroslav: *See—*
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Stradalen, Yngve Bertil: *See—*
Gustafsson, Melker Emanuel; Stradalen, Yngve Bertil; and Zander, Erik Gustav Ake, 3,837,278.

Strader, George C.: *See—*
Goldfarb, Adolph E.; Strader, George C.; and Strader, Judy D., 3,837,114.

Strader, Judy D.: *See—*
Goldfarb, Adolph E.; Strader, George C.; and Strader, Judy D., 3,837,114.

Strahl, Wolfgang A.; and Nichols, Donald S., to Koracorp Industries, Inc., mesne. Simulated leather fabric. 3,837,983, Cl. 161-53.000.

Strain, Robert Joseph: *See—*
Silbersmith, Donald Jack; and Strain, Robert Joseph, 3,838,438.

Straley, Robert J.; and Muller, Victor C., to Fire Sprinkler Control Company. Sprinkler head closure. 3,837,406, Cl. 169-90.000.

Stratienko, Andrew; Kornsey, Robert J.; and Paulhamus, Joseph L., to Philadelphia Gear Corporation. Tug/barge latching mechamism. 3,837,316, Cl. 114-235.00a.

Strauch, Otto R.: *See—*
Ritter, James R.; and Strauch, Otto R., 3,837,806.

Streicher, Peter, to Tiefbohr-Technik GmbH & Co. Means for damping vibrations of tools in drilling machines or the like. 3,837,758, Cl. 408-143.000.

Stringer, Carl Wayne, to Radon Development Corporation. Process for removing oil from around a wellbore. 3,837,402, Cl. 166-303.000.

Strong, Paul G. Blow molding machine. 3,837,780, Cl. 425-297.000.

Stucker, Nova E.: *See—*
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Stumpf, Horst: *See—*
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Stumpf, Irving L.: *See—*
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Stungis, George E.; Merker, Steve L.; and Heitkamp, Norman D., to Brown & Williamson Tobacco Corporation. Separation of tobacco fines from sand. 3,837,481, Cl. 209-4.000.

Sturm, Ernst F.: *See—*
Fox, Robert B.; and Sturm, Ernst F., 3,837,653.

Sugimoto, Toshio; Uema, Toru; and Takeuchi, Isamu, to NGK Insulators, Ltd. Method of analyzing oxygen. 3,837,808, Cl. 23-232.00e.

Sugiura, Mamoru; Kitamikado, Tadashi; and Kato, Kazuo, to Maruko Seiyaku Kabushiki Kaisha. Disaccharide polysulfate ester hydroxyaluminum allantoinate-aluminum complex and process for preparing same. 3,838,150, Cl. 260-234.00r.

Sugiyama, Kenichi. Device adapting an existing domestic bathtub for steam or dry hot-air bath. 3,837,014, Cl. 4-162.000.

Suh, John T.; and Schnettler, Richard A. 2-Heterocyclic-1,3-benzodiazepines. 3,838,122, Cl. 260-247.50b.

Sullivan, Joseph H.: *See—*
Bradbury, Robert C.; and Sullivan, Joseph H., 3,837,569.

Sullivan, Robert Roy. Tapered object attitude sensing and turning system. 3,838,292, Cl. 307-112.000.

Sulzer Brothers Ltd.: *See—*
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Castriota-Scanderbeg, George, 3,837,616.
Schoch, Hans; and Herzog, Josef, 3,837,791.

Sumitomo Metal Industries Limited: *See—*
Tanoue, Toyosuke; Araki, Taiji; and Aoki, Takeo, 3,837,842.

Sumner, Paul E.: *See—*
Sumner, Paul E.; and Peter, Joseph E. (said Peter assor. to said), 3,837,890.

Sumner, Paul E.; and Peter, Joseph E., said Peter assor. to said Sumner, Paul E. Drapery marking method utilizing invisible dyes. 3,837,890, Cl. 117-37.00r.

Sun Chemical Corporation: *See—*
Himics, Richard J., 3,838,164.

Sun, George C. Hoop toy. 3,837,116, Cl. 46-220.000.

Sun Oil Company (Deleware): *See—*
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Sunbeam Corporation: *See—*
Walter, John; Chambers, Worthy L.; and Stipanuk, John M., 3,837,587.

Sunbeam Plastics Corporation: *See*—
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Suppe, Hansjoachim: *See*—
Meyerhuber, Wittich; Koblitz, Werner; and Suppe, Hansjoachim, 3,837,184.

Sutherland, John A.; and Sweny, John W., to Allied Chemical Corporation. Simultaneous drying and sweetening of wellhead natural gas. 3,837,143, Cl. 55-32.000.

Sutherland, Julian C.: *See*—
Naas, Hartley M.; Sutherland, Julian C.; and Nesbitt, Dale D., 3,838,250.

Suttill, Francis John, Jr.; Holt, John M.; and Ray, Robert H., to Commplex, Inc. Electronic variable combination lock and monitoring system. 3,838,395, Cl. 340-149.00a.

Suttles, Eldon J., to Eli Bridge Company. Amusement ride seat and safety guard. 3,837,706, Cl. 297-384.000.

Sutton, Alan: *See*—
Warman, Bloomfield James; Evans, John Ford; Walker, Stephen Sidney; Mc Pherson, John Hugh; and Sutton, Alan, 3,838,226.

Sutton, Thomas E.: *See*—
Sence, Leonard H.; and Sutton, Thomas E., 3,837,627.

Suzuki, Masane; Kanaya, Motonori; and Seki, Kazuhisa, to Fuji Photo Optical Co., Ltd. Camera for making holograms. 3,837,726, Cl. 350-3.500.

Suzuki, Torao: *See*—
Kanki, Hiroshi; Suzuki, Torao; and Kurita, Kazuyoshi, 3,837,378.

Swaim, Frank H.; and Widmayer, Raymond S., to United States of America, The. Silent launch gun for projectiles. 3,837,107, Cl. 42-1.00f.

Swan, Clarence Burke: *See*—
Knerr, Reinhard Heinrich; and Swan, Clarence Burke, 3,838,356.

Swarat, Walter: *See*—
Lehr, Heinz; and Swarat, Walter, 3,837,584.

SWE-PE-DENT AB, mesne: *See*—
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Sweet, Albert; and Kaufman, Arnold S., to Elster's, Inc., Effluent ventilation and cleaning apparatus. 3,837,269, Cl. 98-115.00k.

Sweny, John W.: *See*—
Sutherland, John A.; and Sweny, John W., 3,837,143.

Swidler, Ronald: *See*—
Wilson, Katherine W.; Swidler, Ronald; and Gamarra, Jose P., 3,837,799.

Swier, Raymond R.: *See*—
Kutik, Louis F.; and Swier, Raymond R., 3,837,527.

Swindle, Kenneth C. Jar-type drilling tool. 3,837,414, Cl. 175-299.000.

Swinehart, Carl F.; and Lindow, James T., to Kewanee Oil Company. Optical bodies with non-epitaxially grown crystals on surface. 3,837,882, Cl. 117-16..000.

Swingline Inc.: *See*—
Malcik, Frank J., 3,837,754.
Ruskin, Henry, 3,837,456.

Swisslok Company: *See*—
Graham, Francis David; and Bryceland, Maurice Cyril, 3,837,136.

Switches, Incorporated: *See*—
Wolf, Walter A.; Gebhardt, Wallace A.; and Corn, Prentice R., 3,838,236.

Swodenk, Wolfgang: *See*—
Schwerdtel, Wulf; Kronig, Walter; Scharfe, Gerhard; and Swodenk, Wolfgang, 3,838,019.

Sybertz, Hans, to Hubel & Platzer Maschinen-Baugesellschaft m.b.H. System for cutting splines in boards. 3,837,384, Cl. 144-326.00r.

Sykora, Richard, to Ceske vysoke uceni technicke v Praze. Apparatus for the determination of the quality of a pupil's response. 3,837,093, Cl. 35-9.00a.

Symons, Lester M., to Uniroyal, Inc. Apparatus for the application of a single strip tread to a carcass. 3,837,967, Cl. 156-405.000.

Szarka, Sandor: *See*—
Jaffa, David; and Szarka, Sandor, 3,837,277.

Szymber, Oleg: *See*—
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Tabo Industriugnar AB: *See*—
Falling, Kjele, 3,837,301.

Takahashi, Kentaro; Hasegawa, Minoru; and Nara, Kaoru, to Nippon Piston Ring Co., Ltd. Thermal and abrasion resistant sintered alloy. 3,837,816, Cl. 29-182.000.

Takahashi, Kiyoshi: *See*—
Ogiso, Mitsutoshi; Hosoe, Kazuya; Takahashi, Kiyoshi; and Itani, Takashi, 3,837,736.

Takamatsu, Ikuo, to Yoshida Kogyo Kabushiki Kaisha. Automatic locking sliders. 3,837,050, Cl. 24-205.14r.

Takashima, Toshiyuki: *See*—
Kanno, Isawo; Takashima, Toshiyuki; and Bokuda, Yoshiyuki, 3,838,091.

Takashima, Tsuyoshi: *See*—
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Takeda Chemical Industries Ltd.: *See*—
Kanki, Hiroshi; Suzuki, Torao; and Kurita, Kazuyoshi, 3,837,378.

Takeda, Hitoshi: *See*—
Tsuchiya, Mitsuharu; Sato, Teruo; Takeda, Hitoshi; and Yoshiyama, Masami, 3,838,209.

Takeda, Reiji: *See*—
Kobayashi, Katsumi; Takeda, Reiji; and Sato, Kimiaki, 3,837,263.

Takenaka, Sadao: *See*—
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Takeuchi, Isamu: *See*—
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Takeuchi, Shohgo: *See*—
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Tamaki, Kohji: *See*—
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Tamamura, Takeo: *See*—
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Tamura Electric Works, Ltd.: *See*—
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Tanaka, Goro: *See*—
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Tanasawa, Yasusi; Yamada, Mitsumasa; Ito, Mikiji; and Ishiguro, Kenji, to Nippondenso Co., Ltd., Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho. Exhaust gas cleaning device. 3,837,814, Cl. 23-277.00c.

Tang, Walter K., to Du Pont de Nemours, E. I., and Company. Branched ethylene/diene copolymer. 3,838,137, Cl. 260-80.780.

Tanimoto, Kenji, to Fuji Xerox Co., Ltd. Frequency multiplying circuit. 3,838,344, Cl. 328-20.000.

Tankey, Howard William: *See*—
Fox, Richard; and Tankey, Howard William, 3,837,937.

Tanno, Naoichiro: *See*—
Yasumori, Eiji; and Tanno, Naoichiro, 3,837,055.

Tanoue, Toyosuke; Araki, Taiji; and Aoki, Takeo, to Sumitomo Metal Industries Limited. Method for projecting pieces of a deoxidizing agent into molten steel. 3,837,842, Cl. 75-58.000.

Tarkkanen, Viekko, to Packard Instrument Company, Inc. Absorbent for carbon-14 dioxide. 3,837,807, Cl. 23-232.00r.

Tarmann, Bruno A., to Gebr. Bohler & Co. AG. Process of continuously hot-forming continuous cast steel stock. 3,837,207, Cl. 72-366.000.

Tasman Vaccine Laboratories Limited: *See*—
Grant, Roy Arthur, 3,838,143.

Tate, Jack F.: *See*—
Allen, Joseph C.; Tate, Jack F.; and Park, Jack H., 3,837,399.

Tatsuta, Sumitaka; and Ueno, Wataru, to Fuji Photo Film Co., Ltd. Process for producing photographic materials. 3,837,886, Cl. 117-34.000.

Taubert, Bernard. Massaging apparatus. 3,837,336, Cl. 128-59.000.

Tavis Corporation: *See*—
Tavis, John R., 3,837,227.

Tavis, John R., to Tavis Corporation. Linear transducer system. 3,837,227, Cl. 73-398.00r.

Taylor, Gordon A.: *See*—
Ishimitsu, Kichio; Kelly, John D.; Miller, Douglas S.; and Taylor, Gordon A., 3,838,425.

Taylor, Thomas B. Franklin, to Ste Croix Foundry Ltd., mesne. Pipe joint sleeve. 3,837,683, Cl. 285-236.000.

Tchakgarian, Rene Verazin. Luminous outdoor sign board resistant to inclement weather. 3,837,105, Cl. 40-130.00r.

Technion Research and Development Foundation Limited: *See*—
Yarnilsky, Chaim M., 3,838,032.

Teitel, Sidney: *See*—
Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, 3,838,181.

Telefonaktiebolaget Ericsson, L. M: *See*—
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Telefonaktiebolaget LM Ericsson: *See*—
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Telesco Brophey Limited: *See*—
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Teletype Corporation: *See*—
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Telex Computer Products, Inc.: *See*—
Ysbrand, Floyd R., 3,838,463.

Tennant Company: *See*—
Kasper, Joseph G., 3,837,029.
Kimzey, Paul W.; Olson, Donald L.; Delmore, Daniel A.; and Krier, Keith N., 3,837,038.

Tension Structures Co; a Partnership composed of: *See*—
Huddle, Carl Frederick (Huddle, James R.), 3,837,405.

Teranishi, Akihiko, to Kabushiki Kaisha Teranishi Denki Seisakusho. Massaging vibrator. 3,837,335, Cl. 128-52.000.

Terrell, James L.; and Curry, Jerome. Tension (bobby) pin. 3,837,350, Cl. 132-48.00r.

Terry, Rupert Douglas, to Johns-Manville Corporation. Method and apparatus for compressing material and enclosing the same in a plastic film. 3,837,138, Cl. 53-24.000.

Tessler, Martin M., to National Starch and Chemical Corporation. Starch phosphate esters. 3,838,149, Cl. 260-233.500.

Texaco Inc.: *See*—
Allen, Joseph C.; Tate, Jack F.; and Park, Jack H., 3,837,399.
Itria, Oswald A., 3,837,424.
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Texas Instruments Incorporated: *See*—
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Textron, Inc.: *See—*
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Lesnansky, Michael, Jr., 3,837,522.

Thaler, Sherwood S., to American Optical Corporation. Externally-controlled implantable cardiac-pacer capture margin testing apparatus and method. 3,837,348, Cl. 128-419.00p.

Theodorus, Adrianus; and Blok, Onno Jan Theodoor. Cast concrete construction. 3,837,131. Cl. 52-577.000.

Thiery, Daniel: *See—*
Cuaz, Daniel; Pottier, Paul; and Thiery, Daniel, 3,838,061.

Thiery, Jean; Reynard, Remi; and Willm, Yves, to Institut Francais du Petrole, des Carburants Et Lubrifiants. Device for automatically positioning the windings formed by a flexible elongated member stored in an annular basket rotatable about a vertical axi. 3,837,592, Cl. 242-83.000.

Thiokol Chemical Corporation: *See—*
Shaffer, Donald Edward; Cassidy, Herbert W. D.; and Andrews, Walter G., 3,837,281.
Villa, Jose L., 3,838,110.

Thiokol Corporation, mesne: *See—*
Ross, Lee F.; Wilkinson, James E.; Craig, Fred A.; and Hudson, Allan M., 3,837,774.
Villa, Jose L., 3,838,078.

Thomas, John M., to Thomas Technadent Products, Inc. Dental model construction method. 3,838,187, Cl. 264-17.000.

Thomas Technadent Products, Inc.: *See—*
Thomas, John M., 3,838,187.

Thomas, William E., Jr., to Du Pont de Nemours, E. I., and Company. Stabilization of iron catalysts. 3,838,070, Cl. 252-472.000.

Thominet, Michel Leon, to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France. 3-Alkoxy-thianaphthene-2-carboxamides. 3,838,169, Cl. 260-330.500.

Thomson CSF: *See—*
Bricot, Claude; Le-Merer, Jean Pierre; and Puech, Clude, 3,837,725.

Thomson-CSF: *See—*
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Thornton, Thomas F. Interdental tooth cleaner and method for making same. 3,837,051, Cl. 132-89.000.

Thul and said Churchill: *See—*
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Thul, Richard L.: *See—*
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Tiefbohr-Technik GmbH & Co.: *See—*
Streicher, Peter, 3,837,758.

Tietz, Raymond Frank, to Du Pont de Nemours, E. I., and Company. Process of strengthening polycrystalline refractory oxide fibers. 3,837,891, Cl. 117-46.0fa.

Tilgner, Peter: *See—*
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Tilloson, August Henry: *See—*
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Timex Corporation: *See—*
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Tiska, Ralph. Self-rocking doll. 3,837,113, Cl. 46-116.000.

Tokuno, Masateru, to Rengo Kabushiki Kaisha (Rengo Co., Ltd.). Device for securing slitter or scorer head. 3,837,265, Cl. 93-58.200.

Toledo, Emil; Sprague, Dennis R.; and Mocanu, Erick L., to United States of America, Navy. Method and electrlyte for producing a copper plated microstrip. 3,838,025, Cl. 204-52.00r.

Tolle, Gunter. Lubricating device for rotary hooks in cyclically operable sewing machines. 3,837,307, Cl. 112-256.000.

Tomlinson, Bayne B., to Borg-Warner Corporation. Centrifugal switch. 3,838,238, Cl. 200-80.00b.

Tompsett, Michael Francis: *See—*
Berglund, Carl Neil; Nicollian, Edward Haig; Tompsett, Michael Francis; and Waggener, Herbert Atkin, 3,837,907.

Topala, Dumitru: *See—*
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Toray Industries, Inc.: *See—*
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Torit Corporation, The: *See—*
Kubiak, John W., 3,837,150.

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Torres, Fuasto Orlando. Electronic magneto. 3,838,298, Cl. 307-309.000.

Tower, Allen J., to Electro-Catheter Corporation. Inflatable balloon-type pacing probe. 3,837,347, Cl. 128-404.000.

Toyama, Yoshio, to Mitsui Shipbuilding and Engineering Co. Ltd. Underwater oil stroage. 3,837,310, Cl. 114-.50t.

Toyo Kagaku Kabushiki Kaisha; a/k/a Toyo Chemical Co., Ltd.: *See—*
Asakura, Hiroshi; Sakai, Keisuke; Koyama, Masaru; and Mizuguchi, Hironori, 3,837,973.

Toyo Kogyo Company Limited: *See—*
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Toyo Soda Manufacturing Co., Ltd.: *See—*
Kosaka, Yujiro; Uemura, Masaru; Fujiki, Tokio; and Saito, Mitsutaka, 3,838,079.

Toyoda Koki Kabushiki Kaisha: *See—*
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Toyota Automatic Loom Works, Ltd.: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Trachtenberg, William; McCabe, John M.; and Kasper, George P., to Eastman Kodak Company. Electrostatic developer composition containing both rough and smooth carrier particles. 3,838,054, Cl. 252-62.100.

Traskos, Richard T., to Lith-Kem Corporation. Printing plate and method of making the same. 3,837,858, Cl. 96-75.000.

Trefilunion: *See—*
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Treptow, Wolfram: *See—*
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Treude, Robert C.: *See—*
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Triangle Package Machinery Company: *See—*
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Tribuno, Robert F.: *See—*
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Triebold, Karl-Friedrich: *See—*
Buddruss, Claus-Peter; Conjaeger, Arnim; and Triebold, Karl-Friedrich, 3,838,389.

Trifunovic, Alexander L.; and Hills, William H., to Joseph Bancroft & Sons Company. Yarn winding mechanism in a stuffer crimper. 3,837,053, Cl. 28-1.700.

Trotto, Susan Hensen: *See—*
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True Pitch, Inc.: *See—*
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Trullas, Isidro Folch, to Argelich, Termes y C$^{a}$. Sociedad Anonima. Apparatus for the wet treatment of cloths. 3,837,187, Cl. 68-15.000.

TRW Inc.: *See—*
Baron, Wilfred R., 3,837,924.
Schirmer, Kenneth L., 3,837,121.

Tsuchiya, Mitsuharu; Sato, Teruo; Takeda, Hitoshi; and Yoshiyama, Masami, to Matsushita Electric Industrial Co., Ltd. Scanning apparatus for a matrix display panel. 3,838,209, Cl. 178-7.30d.

Tsuji, Nobuo; and Hasegawa, Eiichi, to Fuji Photo Film Co., Ltd. Light-sensitive compositon containing xylene resin. 3,837,859, Cl. 96-91.00n.

Tsuru, Daisuke: *See—*
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Tuboplast-France: *See—*
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Tucker, Robert C., Jr., to Union Carbide Corporation. Process for producing a corrosion resistant duplex coating. 3,837,894, Cl. 117-70.00a.

Turner, Nathan L., to Petro-Tex Chemical Corporation. Biodergradable emulsifiers for polychloroprene. 3,838,141, Cl. 260-92.300.

Turner, William E.: *See—*
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Twiehaus, Marvin J.: *See—*
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Uchida, Hisashi; and Hamatsuki, Takeshige, to Nippon Electric Company, Limited. Temperature control device for thermostatic oven. 3,838,248, Cl. 219-210.000.

Ueda, Kazuo, to Shikoku Kakooki Co., Ltd. Bottling system. 3,837,529, Cl. 221-265.000.

Uema, Toru: *See—*
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Uemichi, Sachio; Miyauchi, Kazuto; and Nakao, Susumu, to Yuasa Battery Company Limited. Battery powered equipment. 3,838,327, Cl. 320-2.000.

Uemura, Hiroshi: *See—*
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Ueno, Toshio; and Konakawa, Yuzuru, to Kabushiki Kaisha Akuto Giken. Solenoid magnet. 3,838,370, Cl. 335-255.000.

Ueno, Wataru: *See—*
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Uihlein, Rolf Dieter: *See—*

Kugelberg, Joachim; Servais, Carlo; and Uihlein, Rolf Dieter, 3,837,583.
Ukihashi, Hiroshi; Kirimoto, Kazusuke; and Kojima, Hiroaki, to Asahi Glass Company Ltd. Oil- and water-repellent composition of perfluoroalkyl acrylates or methacrylates. 3,838,083, Cl. 260-29.60f.
Ulbrich, Gerhard, to Bosch, Robert, G.m.b.H. Apparatus for cleaning windshields or the like. 3,837,032, Cl. 15-250.170.
Umlor, Max Frederick, to Dresser Industries, Inc. Crane bridge belt drive. 3,837,291, Cl. 105-163.00r.
Unarco Industries, Inc.: *See—*
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Uno, Naoyuki; and Watanabe, Koichiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Spring brake. 3,837,441, Cl. 188-82.600.
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Urban, John A.; Hopkins, Gary L.; and Armstrong, John Keith, to Eaton Corporation. Emergency control valve. 3,837,361, Cl. 137-627.500.
Urban, Michael J.: *See—*
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Urban, Peter, to Universal Oil Products Company. Continuous process for scrubbing $SO_2$ from a gas stream containing $SO_2$ and $O_2$. 3,838,191, Cl. 423-242.000.
Urbas, John C., to Midland-Ross Corporation. Method and device for moisturizing a web, including an air header with perforated walls. 3,838,000, Cl. 162-207.000.
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Van De Plassche, Rudy Johan, to U.S. Philips Corporation. Four-quadrant multiplier circuit. 3,838,262, Cl. 235-194.000.
Van den Berg, Johan H.; Hoebrechts, Albert J. G.; and Van Eekelen, Alex Herman A. M., to Monroe Belgium N.V. Windshield wiper construction. 3,837,033, Cl. 15-250.320.
Van Der Laan, Karel; and Peloschek, Hans Peter, to U.S. Philips Corporation. Method of manufacturing a polycrystalline ferrite body. 3,837,910, Cl. 117-234.000.
Van Der Lely, Cornelis. Devices for picking up material lying on the ground. 3,837,157, Cl. 56-14.500.
Van Der Schoot, Theodore H., to GTE Sylvania Incorporated. Apparatus for conveying articles. 3,837,471, Cl. 198-210.000.
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Van Slyke, Gary C. Inflatable weather seal for camper-truck combinations. 3,837,700, Cl. 296-23.0mc.
van Velzen, Antoon Gerardus, to Gist-Brocades N.V. Water-insoluble enzyme composition. 3,838,007, Cl. 195-31.00r.
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Vanderleeden, Johannes Cornelis, to Bell Telephone Laboratories, Incorporated. Laser arrangements including catadioptric elements made from graded-index optical fibers. 3,838,358, Cl. 331-94.500.
VanDeWalker, Roger D.; and Howe, Blair E., to California Injection Molding Co., Inc. Apparatus for molding articles containing inserts and means for feeding inserts to the mold. 3,837,772, Cl. 425-126.000.
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Windmoller & Holscher: *See—*
Marquardt, Bruno; and Bosse, Frank, 3,837,564.

Wirges, Winfried, to Stabilus GmbH. Apparatus for bleeding metered increments of a compressed gas from a container. 3,837,355, Cl. 137-322.000.

Wirth, Joseph G.; and Heath, Darrell R., to General Electric Company. Process for making polyetherimides and products derived therefrom. 3,838,097, Cl. 260-49.000.

Witt, William W.: *See—*
Starns, Robert M.; and Witt, William W., 3,837,255.

Wittekoek, Stefan: *See—*
Bongers, Piet Frans; Wittekoek, Stefan; and Popma, Theo Johan August, 3,838,450.

Woitun, Eberhard; Narr, Berthold; and Schroter, Wolfgang, to Boehringer Ingelheim G.m.b.H. 2-(Aminoalkyl-amino)-4-amino-thieno [3,2-d] pyrimidines. 3,838,121, Cl. 260-247.100.

Wolbert, Fred A., to Arrowhead Engineering Corporation. Apparatus for making sheet metal pulleys. 3,837,200, Cl. 72-57.000.

Wolf, Siegbert: *See—*
Gluntz, Douglas M.; Fitzsimmons, George W., Jr.; Wolf, Siegbert; and Kudirka, Alvydas A., 3,838,002.

Wolf, Walter A.; Gebhardt, Wallace A.; and Corn, Prentice R., to Switches, Incorporated. Actuating means for warning devices. 3,838,236, Cl. 200-61.560.

Wolfson, Gerald: *See—*
Heard, James L.; Hoffman, William C.; Opittek, Eugene W.; and Wolfson, Gerald, 3,838,420.

Wolfson, Sidney K., Jr.: *See—*
Ng, Daniel Y. C.; Wolfson, Sidney K., Jr.; and Appleby, Anthony J., 3,837,922.

Wong, Shi-Yin, to Hughes Aircraft Company. Liquid crystal composition. 3,838,059, Cl. 252-299.000.

Wood, M. Dale, 50% to Meltzer, Harold. Method and apparatus for purifying fluids. 3,837,800, Cl. 21-54.00r.

Wood, Richard T.: *See—*
Becker, Stanley A.; Fizett, William B.; and Wood, Richard T., 3,837,795.

Woodside Construction Corporation: *See—*
Shmuel, Dan Ben, 3,837,801.

Wray, William R., to Polaroid Corporation. Analog information storage and retrieval system. 3,838,447, Cl. 360-26.000.

Wright, George, to Crown Cork & Seal Company, Inc. High pressure water impact spraying system for magnetic can hangers. 3,837,037, Cl. 15-302.000.

Wright, Robert Charles, to Elco Corporation. Post terminal insertion apparatus. 3,837,063, Cl. 29-203.00p.

Wu, Stanley T.T. and Chao, Yau-Shieng: *See—*
Chao, Yau-Shieng, 3,837,234.

Wuthrich, Paul, to Timex Corporation. Universal time watch. 3,837,161, Cl. 58-42.500.

Wynn, Robert W.: *See—*
Randall, David I.; and Wynn, Robert W., 3,838,180.

Xerox Corporation: *See—*
Bauer, George T., 3,837,732.
Ciuffini, Anthony J., 3,837,849.
Gormly, John F., 3,838,220.
Jones, Robert N., 3,837,906.
Menz, Elsie L., 3,837,883.
Nelson, Frank M., 3,838,260.
Norton, James R.; and Schmalzbauer, Herbert F., 3,837,640.
Spencer, Paul R., 3,837,741.

Yactor, Richard, to Motorola, Inc. Broadband cable communications system. 3,838,343, Cl. 325-58.000.

Yamada, Mitsumasa: *See—*
Tanasawa, Yasusi; Yamada, Mitsumasa; Ito, Mikiji; and Ishiguro, Kenji, 3,837,814.

Yamamoto, Michiaki: *See—*
Miyazaki, Kazuhide; Yamamoto, Michiaki; Kobayashi, Shigehiko; and Sakai, Toshiyuki, 3,838,069.

Yamamoto, Osamu, to Kabushikikaisha Aichidenkikosakusho. Motor operated can opener. 3,837,075, Cl. 30-4.00r.

Yamamoto, Takehiko: *See—*
Fukumoto, Jyuichiro; Yamamoto, Takehiko; and Tsuru, Daisuke, 3,838,009.

Yamashita, Shigeji: *See—*
Nishimura, Tadashi; Nakayama, Yoshifumi; and Yamashita, Shigeji, 3,837,980.

Yang, David C., to Engelhard Minerals & Chemicals Corporation. Separation of mica from clay by froth flotation of clay. 3,837,488, Cl. 209-167.000.

Yarnilsky, Chaim M., to Technion Research and Development Foundation Limited. Compensated polarograph. 3,838,032, Cl. 204-195.00r.

Yasumori, Eiji; and Tanno, Naoichiro, to Shimadzu Seisakusho Ltd. Device for leasing two rows of yarn into a single hank. 3,837,055, Cl. 28-21.000.

Yatsushiro, Toyohiko; Takashima, Tsuyoshi; Iwasaki, Takashi; and Okamura, Susumu, to Kirin Beer Kabushiki Kaisha. Method and means for filling beer or the like into containers without introduction of air. 3,837,137, Cl. 53-22.00r.

Yelich, William: *See—*
Zieg, Clifford V.; and Yelich, William, 3,837,358.

Yelin, Robert E.; Hendrix, James E.; and Villiers, Ralph F., to FMC Corporation. Polyester modification with an oxidizing chemical. 3,837,798, Cl. 8-115.500.

Yinon, Jehuda: *See—*
Klein, Fritz S.; and Yinon, Jehuda, 3,838,280.

Yokoo, Horosi: *See—*
Kageyama, Osamu; Kai, Manabu; and Yokoo, Horosi, 3,838,020.

Yonekura, Yasushi: *See—*
Akamatsu, Kiyoshi; Maruta, Masayasu; and Yonekura, Yasushi, 3,837,887.

Yonker, John H., to Otis Engineering Corporation. Kickover tool. 3,837,398, Cl. 166-117.500.

Yoshida Kogyo Kabushiki Kaisha: *See—*
Takamatsu, Ikuo, 3,837,050.

Yoshida, Mikihiko: *See—*
Kurimoto, Masashi; and Yoshida, Mikihiko, 3,838,005.

Yoshiyama, Masami: *See—*
Tsuchiya, Mitsuharu; Sato, Teruo; Takeda, Hitoshi; and Yoshiyama, Masami, 3,838,209.

Young, Irvin L. Baggage tags. 3,837,101, Cl. 40-21.000.

Young, John S.: *See—*
Limberg, Anthony; Wedmore, William R.; Ellyn, Glen; and Young, John S., 3,838,225.

Ysbrand, Floyd R., to Telex Computer Products, Inc. Automatic flux shield engagement mechanism. 3,838,463, Cl. 360-128.000.

Yuasa Battery Company Limited: *See—*
Uemichi, Sachio; Miyauchi, Kazuto; and Nakao, Susumu, 3,838,327.

Zaccard, Edward F. Magnetic locating device. 3,837,274, Cl. 100-35.000.

Zachman, Anthony J. Combined joist and reinforcing bar holder and structure formed therewith. 3,837,135, Cl. 52-702.000.

Zalay, Andrew W.; and Bell, Malcolm R., to Sterling Drug Inc. 1-Alkyl-1H, 4H-pyrido [2,3-d] [1,3] oxazine-2,4-diones and their conversion to 1-alkyl-1,4-dihydro-4-oxo-1,8-naphthyridine-3-carboxylic acids. 3,838,120, Cl. 260-244.00r.

Zalewski, Edmund J.; Simonian, John L.; and Keating, John T., to Schenectady Chemicals, Inc. Wire enamel based on amide-imide-hydantoin polymers. 3,838,088, Cl. 260-33.40p.

Zander, Erik Gustav Ake: *See—*
Gustafsson, Melker Emanuel; Stradalen, Yngve Bertil; and Zander, Erik Gustav Ake, 3,837,278.

Zanoni, Gianfranco: *See—*
Arrigoni, Virgilio; Gaetani, Bruno; Marchesi, Gianfranco; and Zanoni, Gianfranco, 3,837,165.

Zaramella, Gian Carlo, to O.M.P. Officine Meccaniche Ponti & C. s.n.c. Machine for bending plated sections. 3,837,204, Cl. 72-153.000.

Zell, Michael N.: *See—*
Anderson, Theodore H.; O'Konski, George J.; and Zell, Michael N., 3,837,638.

Zeller, Bruno: *See—*
Schuler, Hermann; and Zeller, Bruno, 3,837,245.

Zellweger AG: *See—*
Lauffer, Hermann, 3,838,347.

Zellweger, Ltd.: *See—*
Brassel, Peter, 3,837,252.

Zenith Radio Corporation: *See—*
Park, Yong S., 3,838,432.
Stewart, David S., 3,838,460.

Zero Gage Company, mesne: *See—*
Dunn, Garf L., 3,837,085.

Zero Manufacturing Company: *See—*
Duncan, Lloyd P.; and Oberg, Nathan, 3,837,318.

Zhdaneev, Vasily Vasilievich: *See—*
Golantsev, Oleg Alexandrovich; Zhdaneev, Vasily Vasilievich; Bocharov, Vladislav Ivanovich; and Bodrov, Evgeny Dmitrievich, 3,837,140.

Zieg, Clifford V.; and Yelich, William, to Cla-Val Co. Backflow preventer valve assembly. 3,837,358, Cl. 137-614.200.

Ziehe, Hermann: *See—*

Bachmann, Wilhelm Georg; Scheffel, Ehrenfried G.; Weissenfels, Klaus J.; and Ziehe, Hermann, 3,838,410.
Zimmerman, Howard F., Jr.: *See*—
Bertorelli, Orlando L.; Mays, Robert K.; Williams, Lloyd E.; and Zimmerman, Howard F., Jr., 3,838,192.
Zinnbauer, Gerald B.: *See*—
Ayers, Grover W.; and Zinnbauer, Gerald B., 3,837,692.
Zoecon Corporation: *See*—
Henrick, Clive A.; and Siddall, John B., 3,838,176.
Zukoski, Ronald: *See*—
Jedzinak, John E.; and Zukoski, Ronald, 3,837,349.
400852: *See*—
Logan, Ralph Andre; McFee, James Hoffman; Nahory, Robert Edward; Pollack, Martin Alan; and 400852, 3,837,728.

# LIST OF REISSUE PATENTEES

TO WHOM

## PATENTS WERE ISSUED ON THE 24TH DAY OF SEPTEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anhalt, John W., to International Telephone and Telegraph Corp. Low insertion force connector assembly. Re. 28,171, 9–24–74, Cl. 339—75.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
Marx, Matthias, Zosel, Spoor, Pohlmann, and Heinze. Re. 28,173.

Bloomquist, Wilburn M.: *See*—
Sabatka, Winston E., Bloomquist, and Reinke. Re. 28,174.

Borg Warner Corp.: *See*—
Zimmer, George A. Re. 28,169.

Bradley, John J., and E. D. Nystrand, to Paper Converting Machine Co., Inc. Orbital packing device. Re. 28,172, 9–24–74, Cl. 271—196.

Cope, F., and R. J. Perrine, by Electric Furnace Co. Emergency atmosphere annealing furnace and method. Re. 28,168, 9–24–74, Cl. 432—8.

Electric Furnace Co.: *See*—
Cope, F., and Perrine. Re. 28,168.

Finishing Equipment Inc.: *See*—
Sabatka, Winston E., Bloomquist, and Reinke. Re. 28,174.

Heinze, Dieter: *See*—
Marx, Matthias, Zosel, Spoor, Pohlmann, and Heinze. Re. 28,173.

International Telephone and Telegraph Corp.: *See*—
Anhalt, John W. Re. 28,171.

Kimmel, Merle J., to LaSalle-Dietch Co., Inc. Hot water heater. Re. 28,175, 9–24–74, Cl. 122—136.

LaSalle-Dietch Co., Inc.: *See*—
Kimmel, Merle J. Re. 28,175.

Lehmann, Aribert J. Device for tying the ends of bags. Re. 28,170, 9–24–74, Cl. 53—198.

Marx, Matthias, A. Zosel, H. Spoor, H. Pohlmann, and D. Heinze, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Radiation treatment of halogen containing olefinically unsaturated esters. Re. 28,173, 9–24–74, Cl. 204—159.22.

Nystrand, Ernst D.: *See*—
Bradley, John J., and Nystrand. Re. 28,172.

Paper Converting Machine Co., Inc.: *See*—
Bradley, John J., and Nystrand. Re. 28,172.

Perrine, Ralph J.: *See*—
Cope, F., and Perrine. Re. 28,168.

Pohlmann, Heinz: *See*—
Marx, Matthias, Zosel, Spoor, Pohlmann, and Heinze. Re. 28,173.

Reinke, Raymond W.: *See*—
Sabatka, Winston E., Bloomquist, and Reinke. Re. 28,174.

Sabatka, Winston E., W. M. Bloomquist, and R. W. Reinke, to Finishing Equipment Inc. Apparatus for liquid treatment of flat materials. Re. 28,174, 9–24–74, Cl. 134—117.

Spoor, Herbert: *See*—
Marx, Matthias, Zosel, Spoor, Pohlmann, and Heinze. Re. 28,173.

Zimmer, George A., to Borg Warner Corp. Manufacture of roller chain. Re. 28,169, 9–24–74, Cl. 59—8.

Zosel, Albrecht: *See*—
Marx, Matthias, Zosel, Spoor, Pohlmann, and Heinze. Re. 28,173.

# LIST OF PLANT PATENTEES

Anderson, Frederic W. Pear tree. 3,622, 9–24–74, Cl. 36.

Anderson, Frederic W., to The Burchell Nursery, Inc. Apricot tree. 3,626, 9–24–74, Cl. 39.

Burchell Nursery, Inc., The: *See*—
Anderson, Frederic W. 3,626.

Meilland, Marie-Louise, to Michigan Bulb Co. Rose plant. 3,621, 9–24–74, Cl. 20.

Michigan Bulb Co.: *See*—
Meilland, Marie-Louise. 3,621.

Moore, Ralph S. Miniature rose plant. 3,627, 9–24–74, Cl. 8.

Nakano, Grace Y. Chrysanthemum plant entitled dark pinnacle. 3,624, 9–24–74, Cl. 81.

Olmo, Harold P., to The Regents of the University of California. Grapevine. 3,625, 9–24–74, Cl. 47.

Regents of the University of California, The: *See*—
Olmo, Harold P. 3,625.

Wheatcroft, Harry. Rose plant. 3,623, 9–24–74, Cl. 13.

# LIST OF DESIGN PATENTEES

AB Ljungmans Verkstader: *See*—
Breger, Carl-Arne. 232,969.

A. C. International Corp.: *See*—
Chan, Norman. 232,952.

AMP Inc.: *See*—
Lawson, Gustaf R. 232,906.

Ainslie, Dianne B., to Eastman Kodak Co. Carrying case for a motion picture projector or similar article. 232,977, 9–24–74, Cl. D87—5.

Allied Leisure Industries, Inc.: *See*—
Halliburton, Ronald D. 232,951.

Amerock Corp.: *See*—
Tegner, Raymond U. H. 232,911.

Arnoldy, David N., and A. L. Cline, to Honeywell Inc. Camera flash attachment. 232,973, 9–24–74, Cl. D61—1.

Atkinson, Beri N., to Teledyne, Inc. Dental Accessory table top. 232,940, 9–24–74, Cl. D24—1.

Atwell, Walter E. Finger ring. 232,965, 9–24–74, Cl. D45—10.

Avid Corp.: *See*—
French, Alan, and Machado. 232,946.

Ballenson, Jerrold H. Baby hamper. 232,905, 9–24–74, Cl. D7—163.

Bayly, Peter K., to Wiltshire Cutlery Company Proprietary Ltd. Scabbard and sharpener assembly. 232,899, 9–24–74, Cl. D7—74.

Beck, Nevitt, S. Water sled 232,964, 9–24–74, Cl. D34—42.

Becker, Kurt, to Hermann Heye. Bottle. 232,915, 9–24–74, Cl. D9—135.

Beckman, Glenn B., to Corning Glass Works. Supporting cradle for a serving dish or the like. 232,903, 9–24–74, Cl. D7—130.

Bell, Arthur. Rubber mat. 232,895, 9–24–74, Cl. D6—209.

Bell, Vernon D., and C. L. Seltz, to King-Seeley Thermos Co. Insulated bottle. 232,900, 9–24–74, Cl. D7—77.

Bell, Vernon D., and C. L. Seltz, to King-Seeley Thermos Co. Insulated bottle with attached cup. 232,901, 9–24–74, Cl. D7—77.

Bettonica, Franco, to Perlier S.p.A. Jar or the like. 232,916, 9–24–74, D9—164.

Blakeslee, G. S. and Co.: *See*—
Vlien, Erik O. 232,972.

Blattner, David G., R. H. Drinnon, and S. P. Ruocco, to The Boeing Co. Twin engine-over-wing airplane. 232,927, 9–24–74, Cl. D12—80.

Bluestein, Bernard B., to Sunbeam Corp. Electric percolator. 232,898, 9–24–74, Cl. D7—62.

Boeing Co., The: *See*—
Blattner, David G., Drinnon, and Ruocco. 232,927.

Borraccio, Robert J. Combined ski and ski pole rack. 232,886, 9–24–74, Cl. D6—114.

Breger, Carl-Arne, to AB Ljungmans Verkstader. Gasoline pump. 232,969, 9–24–74, Cl. D52—2.

Burke, Martin E., and L. L. Van Kirk. Finned motorcycle intake manifold. 232,975, 9–24–74, Cl. D77—1.

Capehart Corp.: *See*—
Levine, Robert. 232,889.

Casey, Frank J. Hexagonal billiard-type table. 232,950, 9–24–74, Cl. D34—3.

Chan, Norman, to A.C. International Corp. Mandarin chess board. 232,952, 9–24–74, Cl. D34—5.

Chelman, Willy, to I. D. Innovations & Diffusions S.A. Combined return top and game device. 232,956, 9–24–74. Cl. D34—15.

Christiansen, William, Jr., Snow Foam Products, Inc. Miniature decorative tree. 232,947, 9–24–74, Cl. D29—1.

Cline, Albert L.: *See*—
Arnoldy, David N., and Cline. 232,973.

Conway, Ronald I., R. V. Jones, and D. L. Schaum, to International Business Machines Corp. Teller station. 232,945, 9–24–74. Cl. D26—5.

Corning Glass Works: *See*—
Beckman, Glenn B. 232,903.
Greger, Richard W., and Joy. 232,904.

Cramer, Jerry L., to Texasgulf, Inc. Bookend. 232,885, 9–24–74, Cl. D6—106.

Cuccio, John, to Sybron Corp. Wall clock. 232,919, 9–24–74, Cl. D10—25.

Cupples, David, and Eleanor. Footwear. 232,876, 9–24–74. Cl. D2—272.

Cupples, Eleanor: *See*—
Cupples, David, and E. 232,876.

Daimler-Benz Aktiengesellschaft: *See*—
Wilfert, Karl. 232,928.

Davis, Myron F., Jr., W. Furlani, and B. N. Sassen, to International Business Machines Corp. Marine radar data plotter. 232,941, 9–24–74, Cl. D26—5.

Dillen, Warren A., to H. J. Scheirich Co. Cabinet door. 232,894, 9–24–74, Cl. D6—192.

Dixon, John J., to Duff-Norton Co. Power unit for actuating valves or the like. 232,971, 9–24–74, Cl. D55—1.

Drinnon, Robert H.: *See*—
Blattner, David G., Drinnon, and Ruocco. 232,927.

Duff-Norton Co.: *See*—
Dixon, John J. 232,971.

Dufrechou, Leo F. Mobile home. 232,929, 9–24–74, Cl. D12—103.

Duperrex, Jean-Pierre. Track rail for curtains and the like. 232,910, 9–24–74, Cl. D8—208.

Dyrup, Sven-Erik, to Trelleborgs Gummifabriks AB. Material feed ring for gyratory crushers. 232,970, 9–24–74, Cl. D55—1.

Eastman Kodak Co.: *See*—
Ainslie, Dianne B. 232,977.

Edwards, Edna H. Purse organizer. 232,978, 9–24–74, Cl. D87—2.

Edwards, Michael F., to GKN Sankey Ltd. Wheel. 232,930, 9–24–74, Cl. D12—209.

Entler, Marguerite H. Tray for sugar cubes and creamer. 232,896, 9–24–74, Cl. D7—58.

Farm Better Service, Inc.: *See*—
Hettich, Mark A., and Linskens. 232,938.

Feuer, Perry, to Yuletide Enterprises, Inc. Sparkler toy. 232,960, 9–24–74, Cl. D34—15.

Fiene, Gilbert W., Jr., G. L. Protenic. Toy hoop roller. 232,955, 9–24–74, Cl. D34—5.

French, Alan, and J. Machado, to Avid Corp. Passenger control box. 232,946, 9–24–74, Cl. D26—13.

Funashi, Takaji. Stamp case. 232,887, 9–24–74, Cl. D6—130.

Furlani, Walter: *See*—
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GKN Sankey Ltd.: *See*—
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Gardisette International AG: *See*—
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Gillespie Furniture Co.: *See*—
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Golf, Inc.: *See*—
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Parrotte, Edwin C. 232,892.

Gray, Allan P., and T. M. Murray, to The Perkin-Elmer Corp. Differential scanning calorimeter or similar instrument. 232,968, 9–24–74, Cl. D52—6.

Greger, Richard W., and J. R. Joy, to Corning Glass Works. Removable cover for culinary vessels. 232,904, 9–24–74, Cl. D7—131.

Hagelberg, Torvald A. S. Cable fastener. 232,912, 9–24–74, Cl. D8—230.

Halliburton, Ronald D., to Allied Leisure Industries, Inc. Manually controlled reflective pin-ball game cabinet. 232,951, 9–24–74, Cl. D34—5.

Hettich, Mark A., and C. P. Linskens, to Farm Better Service, Inc. Liquid sprayer. 232,938, 9–24–74, Cl. D23—18.

Heye, Hermann: *See*—
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Hirsch, Bertram H. Retaining wall. 232,931, 9–24–74, Cl. D13—1.

Holes-Webway Co., The: *See*—
Stahel, Alwin J. II. 232,932.
Stahel, Alwin J. II. 232,935.

Honeywell Inc.: *See*—
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I. D. Innovations & Diffusions S.A.: *See*—
Chelman, Willy. 232,956.

International Business Machines Corp.: *See*—
Davis, Myron F., Jr., Furlani, Sassen. 232,941.
Conway, Ronald I., Jones, Schaum. 232,945.

International Design Corporation: *See*—
Moretini, Billy. 232,893.

International Register Co.: *See*—
Rodriguez, Raoul D. 232,920.

Isabell, Walter J.: *See*—
Kramb, Kenneth D., and Isabell. 232,924.

Johnson, Leonard G., to Safe-T-All Corp. Safety overall. 232,875, 9–24–74, Cl. D2—29.

Jones, Robert V.: *See*—
Conway, Ronald I., Jones, Schaum. 232,945.

Joy, J. Roger: *See*—
Greger, Richard W., and Joy. 232,904.

K.I.C. Inc.: *See*—
Kramb, Kenneth D., and Isabell. 232,924.

Kahelin, Edward W. Baseball. 232,957, 9–24–74, Cl. D34—15.

Kaplan, Martin N. Valve reseater. 232,908, 9–24–74, Cl. D8—59.

Kaplan, Martin N. Combined packaging and display container. 232,918, 9–24–74, Cl. D9—191.

Keller, Huey T., to Gillespie Furniture Co. Furniture or the like. 232,890, 9–24–74, Cl. D6—154.

Kemnitzer, Ronald B., to Sunbeam Corp. Electric percolator. 232,897, 9–24–74, Cl. D7—62.

Kennedy, Roger, and P. B. Rothschild, to Pan-Nova, Inc. Gasoline dispensing pump. 232,967, 9–24–74, Cl. D52—2.

Kephart, Lynn H. Combined table and terrarium. 232,877, 9–24–74, Cl. D6—3.

Kessler, Vernon G. Chain roller link. 232,914, 9–24–74, Cl. D8—261.

King-Seeley Thermos Co.: *See*—
Bell, Vernon D., and Seltz. 232,900.
Bell, Vernon D., and Seltz. 232,901.

Kramb, Kenneth D., and W. J. Isabell, to K.I.C. Inc. Vehicular safety device or the like. 232,924, 9–24–74, Cl. D12—7.

Kress, George C.: *See*—
Krumholz, Jerrold J., Reisgen, and Kess. 232,878.

Krumholz, Jerrold J., H. H. V. Reisgen, and G. C. Kress, to Kusan, Inc. Child's table. 232,878, 9–24–74, Cl. D6—5.

Kusan, Inc.: *See*—
Krumholz, Jerrold J., Reisgen, and Kress. 232,878.

Lane, Leslie L., to U.S. Philips Corp. Dry shaver or similar article. 232,981, 9–24–74, Cl. D05—3.

Laske, Louis L., to Vonco Products Inc. Inflatable kite. 232,961, 9–24–74, Cl. D34—15.

Lawlor, John K. Electric highway emergency beacon. 232,923, 9–24–74, Cl. D10—114.

Lawson, Gustaf R., to AMP Inc. Crimping tool. 232,906, 9–24–74, Cl. D8—51.

Levine, Robert, to Capehart Corp. Cabinet. 232,889, 9–24–74, Cl. D6—154.

Levy, Leon M., to Seifix, Inc. Spray head. 232,939, 9–24–74, Cl. D23—35.

Linskens, Charles P.: *See*—
Hettich, Mark A., Linskens. 232,938.

Long, Stapleton. Chair. 232,881, 9–24–74, Cl. D6—37.

Long, Stapleton. Chair. 232,882, 9–24–74, Cl. D6—39.

Machado, Joseph: *See*—
French, Alan, and Machado. 232,946.

Macnab, Basil L. Seat. 232,883, 9–24–74, Cl. D6—48.

Maeda, Hisashi, to Omron Tateisi Electronics Co., Calculating machine. 232,942, 9–24–74, Cl. D26—5.

Maeda, Hisashi, to Omron Tateisi Electronics Co. Calculating machine. 232,943, 9–24–74, Cl. D26—5.

Maeda, Hisashi, and H. Yoshikawa, to Omron Tateisi Electronics Co. Calculating machine. 232,944, 9–24–74, Cl. D26—5.

McCommon, Delmar D., to Packers Bar M Meat Co. Display stand. 232,888, 9–24–74, Cl. D6—153.

Molzen, Charles F., to Rubbermaid Sales Corp. Drainer tray. 232,902, 9–24–74, Cl. D7—188.

Moretini, Billy, to International Design Corp. Shelf module. 232,893, 9–24–74, Cl. D6—189.

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Nisken, Shale J. Flow meter. 232,922, 9–24–74, Cl. D10—96.

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Bell, Vernon D., and Seltz. 232,901.
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# CLASSIFICATION OF PATENTS

## ISSUED SEPTEMBER 24, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

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**CLASS 3**
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6.3 3,837,926
3,837,927
11.5F 3,837,930
12.4 3,837,931
23 3,837,932
31.55 3,837,933
146 3,837,934
187 3,837,935
3,837,936

**CLASS 149**

4 3,837,937
17 3,837,938
19 3,837,939
19.3 3,837,940
22 3,837,941
83 3,837,942

**CLASS 150**

54B 3,837,385

**CLASS 152**

210 3,837,386
361R 3,837,387

**CLASS 156**

4 3,837,944
8 3,837,945
68 3,837,946
69 3,837,947
71 3,837,948
3,837,949
73 3,837,950
85 3,837,951
93 3,837,943
99 3,837,952
108 3,837,953
159 3,837,954
211 3,837,955
218 3,837,956
221 3,837,957
229 3,837,958
246 3,837,959
253 3,837,960
272 3,837,961
293 3,837,962
310 3,837,963
331 3,837,964
382 3,837,965
384 3,837,966
405 3,837,967
415 3,837,968
416 3,837,969
425 3,837,970
447 3,837,971
466 3,837,972
470 3,837,973
489 3,837,974
513 3,837,975
3,837,976
580 3,837,977

**CLASS 159**

13R 3,837,388

**CLASS 161**

1 3,837,978
18 3,837,979
3,837,987
21 3,837,980
36 3,837,981
39 3,837,982
53 3,837,983
3,837,984
55 3,837,985
59 3,837,986
67 3,837,988
68 3,837,989
3,837,990
3,837,991
89 3,837,992
92 3,837,993
100 3,837,994
150 3,837,995
156 3,837,996
170 3,837,997
3,837,998

**CLASS 162**

101 3,837,999
207 3,838,000
416 3,838,001

**CLASS 164**

33 3,837,389
260 3,837,390
282 3,837,391
342 3,837,393

**CLASS 165**

32 3,837,394
47 3,837,395
111 3,837,396
162 3,837,397
282 3,837,392

**CLASS 166**

117.5 3,837,398
266 3,837,399
274 3,837,400
303 3,837,401
3,837,402
315 3,837,403

**CLASS 169**

45 3,837,404
56 3,837,405
90 3,837,406

**CLASS 172**

40 3,837,407
702 3,837,408

**CLASS 173**

48 3,837,409
109 3,837,410

**CLASS 174**

68.5 3,838,203
3,838,204
84S 3,838,205
87 3,838,206
138F 3,838,207

**CLASS 175**

104 3,837,412
292 3,837,413
299 3,837,414

**CLASS 176**

65 3,838,002

**CLASS 177**

123 3,837,415
196 3,837,416

**CLASS 178**

5.4BT 3,838,208
7.3D 3,838,209
7.3R 3,838,210
18 3,838,211
46 3,838,213
69.5R 3,838,214

**CLASS 179**

1SA 3,838,218
1A 3,838,216
3,838,217
1D 3,838,215
2DP 3,838,219
3 3,838,220
15AQ 3,838,222
15BS 3,838,221
18AH 3,838,224
18FA 3,838,223
18GF 3,838,227
18H 3,838,228
18J 3,838,226
18 3,838,212
27FF 3,838,225
100D 3,838,229
170A 3,838,230
175.2R 3,838,231
178 3,838,232

**CLASS 180**

6.48 3,837,417
53WA 3,837,418
65R 3,837,419
79.2R 3,837,421
91 3,837,422

**CLASS 181**

32R 3,837,425
33G 3,837,426
120 3,837,424
131 3,837,681

**CLASS 182**

37 3,837,429
115 3,837,427
129 3,837,428

**CLASS 184**

1E 3,837,430
7D 3,837,431
3,837,432
15R 3,837,433

**CLASS 187**

8.62 3,837,434
8.72 3,837,435
29R 3,837,436

**CLASS 188**

71.6 3,837,420
71.8 3,837,437
72.2 3,837,438
72.6 3,837,439
82.6 3,837,440
3,837,441
3,837,442
196A 3,837,443
315 3,837,444
322 3,837,445
329 3,837,446

**CLASS 190**

52 3,837,447

**CLASS 191**

12.4 3,837,448

**CLASS 192**

4C 3,837,449
12BA 3,837,450
56R 3,837,451

**CLASS 193**

12 3,837,452
40 3,837,453

**CLASS 194**

1K 3,837,454
4R 3,837,455

**CLASS 195**

1.1 3,838,003
1.3 3,838,004
29 3,838,008
31R 3,838,005
3,838,006
3,838,007
65 3,838,009
103.5R 3,838,010
3,838,011
127 3,838,012
139 3,838,013

**CLASS 196**

132 3,838,014

**CLASS 197**

1R 3,837,460
6.7 3,837,456
18 3,837,457
19 3,837,458
3,837,459
126 3,837,461
151 3,837,462
175 3,837,463
186R 3,837,464

**CLASS 198**

27 3,837,465
30 3,837,466
31AC 3,837,467
106 3,837,469
184 3,837,470
210 3,837,471
218 3,837,472
219 3,837,473
236 3,837,468
240 3,837,474

**CLASS 200**

48R 3,838,233
61.18 3,838,235
61.56 3,838,236
61.7 3,838,234
67DA 3,838,237
80B 3,838,238
175 3,838,239

**CLASS 201**

1 3,838,015

**CLASS 202**

83 3,838,016
141 3,838,017

**CLASS 203**

8 3,838,019
56 3,838,020
92 3,838,018

**CLASS 204**

1T 3,838,021
32R 3,838,022
35N 3,838,023
41 3,838,024
52R 3,838,025
55R 3,838,026
74 3,838,027
159 3,838,029
159.14 3,838,030
159.22 Re.28,173
192 3,838,031
195B 3,838,033
3,838,034
195R 3,838,032
250 3,838,035
298 3,838,028

**CLASS 206**

.8 3,837,475
45.34 3,837,476
72 3,837,477
427 3,837,478
489 3,837,479
497 3,837,480

**CLASS 208**

108 3,838,038
3,838,039
111 3,838,040
120 3,838,036
3,838,037
3,838,041
251H 3,838,042
251R 3,838,043

**CLASS 209**

4 3,837,481
5 3,837,482
30 3,837,483
73 3,837,484
74R 3,837,485
106 3,837,487
111.7 3,837,486
167 3,837,488
3,837,489
288 3,837,490

**CLASS 210**

42 3,838,044
52 3,838,045
73 3,837,491
150 3,837,492
197 3,837,493
259 3,837,494
314 3,837,495
321 3,837,496
349 3,837,497
354 3,838,046
387 3,837,498
404 3,837,499
490 3,837,500
522 3,837,501

**CLASS 212**

55 3,837,502
83 3,837,503

**CLASS 214**

6BA 3,837,504
3,837,505
9 3,837,506
17D 3,837,507
83.22 3,837,508
84 3,837,509
152 3,837,510
3,837,511
302 3,837,512
450 3,837,513
3,837,514
730 3,837,515
767 3,837,516

**CLASS 215**

1C 3,837,517
7 3,837,518
3,837,519

**CLASS 219**

56 3,838,241
85 3,838,240
121P 3,838,242
122 3,838,243
131F 3,838,244
137 3,838,245
146 3,838,246
3,838,247
210 3,838,248
460 3,838,249

**CLASS 220**

1.5 3,837,520
3.3 3,837,521
24.5 3,837,522
27 3,837,523
54 3,837,524
55K 3,837,525
60R 3,837,526
72 3,837,527

**CLASS 221**

114 3,837,528
265 3,837,529
268 3,837,530

**CLASS 222**

1 3,837,531
70 3,837,532
94 3,837,533
137 3,837,534
143 3,837,535
146C 3,837,536
153 3,837,537
178 3,837,538
3,837,539
193 3,837,540
397 3,837,541
456 3,837,542

**CLASS 223**

73 3,837,543
87 3,837,544

**CLASS 224**

31 3,837,545
35 3,837,546
42.1E 3,837,547
45S 3,837,548

**CLASS 225**

11 3,837,549

**CLASS 226**

4 3,837,550
97 3,837,551
122 3,837,552
194 3,837,553

**CLASS 227**

25 3,837,554
130 3,837,555
136 3,837,556
152 3,837,557

**CLASS 228**

3 3,837,558
4 3,837,559

**CLASS 229**

15 3,837,560
23BT 3,837,561
32 3,837,562
52B 3,837,563
54R 3,837,564
68R 3,837,565

**CLASS 232**

15 3,837,566

**CLASS 233**

1B 3,837,567

**CLASS 235**

61A 3,837,568
61.11E 3,838,251
61.12M 3,838,252
61.9R 3,837,570
3,838,250
70R 3,837,569
92DN 3,838,254
92SB 3,838,255
92C 3,838,253
150.1 3,838,256
151.1 3,838,257
151.11 3,838,258
152 3,838,259
153AE 3,838,261
153AK 3,838,260
153AM 3,838,264
194 3,838,262
197 3,838,263

**CLASS 236**

49 3,837,571

**CLASS 238**

315 3,837,572

**CLASS 239**

15 3,837,573
57 3,837,574
112 3,837,575
230 3,837,576
265.33 3,837,577
265.35 3,837,578
265.39 3,837,579
3,837,580
289 3,837,581

**CLASS 240**

1LP 3,838,265
2AD 3,838,266
6.4F 3,838,267
9A 3,838,268
102R 3,838,269

**CLASS 241**

4 3,837,582
39 3,837,583
65 3,837,584
213 3,837,585
223 3,837,586
260.1 3,837,587

**CLASS 242**

7.06 3,837,588
25A 3,837,589
54R 3,837,590
55.3 3,837,595
66 3,837,593
68.4 3,837,591
74 3,837,596
83 3,837,592
107.4 3,837,594
129 3,837,597
155R 3,837,598
199 3,837,599

**CLASS 244**

12R 3,837,600
42DB 3,837,601
54 3,837,602
77A 3,837,603
152 3,837,604

**CLASS 246**

125 3,838,271
130 3,838,270
169R 3,838,272

**CLASS 248**

235 3,837,605
242 3,837,606
278 3,837,607
313 3,837,608
317 3,837,609
374 3,837,610
417 3,837,611

**CLASS 249**

66 3,837,613
105 3,837,612
108 3,837,614

**CLASS 250**

201 3,838,274
204 3,838,275
211J 3,838,276
213VT 3,838,273

216 3,838,277
227 3,838,278
270 3,838,279
292 3,838,280
308 3,838,281
372 3,838,282
381 3,838,283
385 3,838,284
413 3,838,285
445 3,838,286
3,838,287
492 3,838,288
506 3,838,289
532 3,838,290
571 3,838,291

**CLASS 251**

29 3,837,615
30 3,837,616
87 3,837,617
129 3,837,618
145 3,837,619
306 3,837,620

**CLASS 252**

8.5A 3,838,047
12 3,838,048
32.7E 3,838,049
40.5 3,838,050
52R 3,838,051
56R 3,838,052
62.1 3,838,054
62.57 3,838,053
63.2 3,838,055
64 3,838,056
117 3,838,057
171 3,838,058
299 3,838,059
301.1R 3,838,062
301.1W 3,838,061
301.2P 3,838,160
301.2R 3,838,063
301.4P 3,838,060
384 3,838,064
408 3,838,065
419 3,838,066
432 3,838,067
437 3,838,068
456 3,838,069
472 3,838,070
514 3,838,071
540 3,838,072

**CLASS 254**

29A 3,837,621
104 3,837,625
131 3,837,622
134.3PA 3,837,623
134.4 3,837,624

**CLASS 256**

64 3,837,626

**CLASS 260**

2P 3,838,073
2.5AD 3,838,075
2.5AQ 3,838,076
2.5BD 3,838,074
17.4GC 3,838,077
24 3,838,078
27R 3,838,079
28.5B 3,838,080
29.3 3,838,081
29.6F 3,838,082
3,838,083
29.6R 3,838,085
29.6Z 3,838,084
30.6R 3,838,086
31.2R 3,838,091
33.4P 3,838,088
33.6UA 3,838,087
33.6F 3,838,092
33.8SB 3,838,089
.3.8UB 3,838,093
37EP 3,838,094
38 3,838,095
40R 3,838,096
45.75N 3,838,099
45.95C 3,838,100
47EN 3,838,101
47ET 3,838,102
47.75R 3,838,090
49 3,838,097
52 3,838,103
63HA 3,838,104
75NP 3,838,105
75M 3,838,106
75T 3,838,107
77.5AQ 3,838,109
77.5CR 3,838,108
3,838,110
78R 3,838,111
3,838,112
78.5R 3,838,113
79.5A 3,838,114
80.71 3,838,115
80.78 3,838,137
87.5C 3,838,138
88.2C 3,838,139
92.3 3,838,140

112R 3,838,141
3,838,143
3,838,144
184 3,838,145
210.5 3,838,146
211.5R 3,838,147
3,838,148
233.5 3,838,149
234R 3,838,150
239BD 3,838,116
239B 3,838,151
239.1 3,838,152
3,838,153
239.3B 3,838,117
240TC 3,838,118
243R 3,838,119
244R 3,838,120
247.1 3,838,121
247.5B 3,838,122
247.7F 3,838,123
248NS 3,838,124
250A 3,838,125
256.4F 3,838,126
256.4Q 3,838,127
260 3,838,128
268R 3,838,129
279A 3,838,130
286A 3,838,131
3,838,134
286R 3,838,132
3,838,133
288R 3,838,135
294.8F 3,838,154
295.5R 3,838,155
3,838,156
296D 3,838,157
296H 3,838,158
296R 3,838,136
3,838,159
302A 3,838,161
307F 3,838,164
307H 3,838,162
3,838,163
309.7 3,838,165
326.16 3,838,167
326.2 3,838,166
326.36 3,838,168
330.5 3,838,169
343.2R 3,838,170
3,838,171
345.7 3,838,172
346.2R 3,838,173
3,838,174
348A 3,838,176
348R 3,838,175
351 3,838,177
369 3,838,178
586AB 3,838,179
625 3,838,181
629 3,838,182
640 3,838,183
961 3,838,180

**CLASS 261**

29 3,837,627
39B 3,837,628
122 3,837,629

**CLASS 264**

.5 3,838,184
8 3,838,185
12 3,838,186
17 3,838,187
29 3,838,188
94 3,838,142

**CLASS 266**

43 3,837,630

**CLASS 267**

1.5 3,837,631

**CLASS 269**

48.1 3,837,632
128 3,837,633
289 3,837,634
325 3,837,635

**CLASS 270**

45 3,837,636

**CLASS 271**

11 3,837,637
95 3,837,638
105 3,837,639
174 3,837,640
196 Re.28,172

**CLASS 272**

33R 3,837,641
62 3,837,642
65 3,837,643

**CLASS 273**

1R 3,837,644
3C 3,837,645
25 3,837,646
73A 3,837,649
81R 3,837,647
95R 3,837,648
105R 3,837,650
137D 3,837,651

157R 3,837,652
178R 3,837,653
185D 3,837,654
185R 3,837,655
225 3,838,098

**CLASS 274**

46B 3,837,656

**CLASS 277**

1 3,837,657
26 3,837,658
74 3,837,659
227 3,837,660

**CLASS 279**

1C 3,837,661

**CLASS 280**

8 3,837,663
11.23 3,837,662
11.35C 3,837,664
43.18 3,837,665
47.13R 3,837,666
47.34 3,837,667
150AB 3,837,669
3,837,671
150B 3,837,668
3,837,670
154.5R 3,837,672
415B 3,837,673
417 3,837,674
423R 3,837,675
432 3,837,678
446B 3,837,676
476R 3,837,677
491E 3,837,679

**CLASS 281**

16 3,837,680

**CLASS 282**

8R 3,837,682

**CLASS 285**

3 3,837,684
45 3,837,685
55 3,837,686
111 3,837,687
177 3,837,688
236 3,837,683
302 3,837,689
319 3,837,690

**CLASS 289**

17 3,837,691

**CLASS 292**

152 3,837,692
207 3,837,693
256.75 3,837,694

**CLASS 293**

71P 3,837,695

**CLASS 294**

1R 3,837,696
74 3,837,697
81R 3,837,698
118 3,837,699

**CLASS 296**

23MC 3,837,700
3,837,701
36 3,837,702
97C 3,837,703

**CLASS 297**

345 3,837,704
353 3,837,705
384 3,837,706

**CLASS 299**

8 3,837,707

**CLASS 301**

1 3,837,708
13SM 3,837,709

**CLASS 303**

21F 3,837,710
3,837,711
3,837,712
22R 3,837,713

**CLASS 305**

24 3,837,714

**CLASS 307**

112 3,838,292
221D 3,838,293
233 3,838,294
238 3,838,295
243 3,838,296
268 3,838,297
309 3,838,298

**CLASS 308**

6R 3,837,715
9 3,837,716
3,837,717
77 3,837,718

**CLASS 310**

6 3,838,299
60 3,838,301
68D 3,838,302
3,838,303
239 3,838,300

**CLASS 312**

195 3,837,719
198 3,837,720
257 3,837,721
276 3,837,722

**CLASS 313**

94 3,838,304
237 3,838,305
409 3,838,306
486 3,838,307

**CLASS 315**

5.47 3,838,308
12 3,838,309
3,838,311
13R 3,838,310
27TD 3,838,312
291 3,838,313

**CLASS 316**

19 3,837,723
20 3,837,724

**CLASS 317**

48 3,838,314
99 3,838,315
101R 3,838,316
119 3,838,317
141S 3,838,319
246 3,838,318
261 3,838,320

**CLASS 318**

66 3,838,321
225R 3,838,322
302 3,838,323
331 3,838,324
415 3,838,325
573 3,838,326

**CLASS 320**

2 3,838,327

**CLASS 321**

3,838,328
3,838,329
5 3,838,330
9R 3,838,331
18 3,838,332
45R 3,838,333

**CLASS 323**

93 3,838,334

**CLASS 324**

10 3,838,335
57R 3,838,336
71R 3,838,337
79D 3,838,338
133 3,838,339
142 3,838,340
161 3,838,341

**CLASS 325**

32 3,838,342
58 3,838,343

**CLASS 328**

20 3,838,344
37 3,838,345
151 3,838,346
164 3,838,347
167 3,838,348

**CLASS 329**

103 3,838,349
104 3,838,350

**CLASS 330**

3,838,351
105 3,838,352
107 3,838,353

**CLASS 331**

4 3,838,354
39 3,838,355
56 3,838,356
74 3,838,357
94.5H 3,838,359
94.5 3,838,358

**CLASS 333**

1.1 3,838,360
3,838,361
9 3,838,362
24.1 3,838,363
28R 3,838,364
30R 3,838,365
72 3,838,366
73S 3,838,367
73W 3,838,368

**CLASS 335**

188 3,838,369
255 3,838,370
278 3,838,371

**CLASS 336**

110 3,838,372

**CLASS 337**

21 3,838,373
163 3,838,374
276 3,838,375
296 3,838,376
416 3,838,377

**CLASS 338**

20 3,838,378
42 3,838,379

**CLASS 339**

14R 3,838,380
21R 3,838,381
59R 3,838,382
75P 3,838,383
112L 3,838,384
196A 3,838,385
226 3,838,386
244VC 3,838,387
258R 3,838,388

**CLASS 340**

5MP 3,837,423
6R 3,838,389
15.5MC 3,838,390
39 3,838,391
75 3,838,392
146.1AG 3,838,393
147R 3,838,394
149A 3,838,395
172.5 3,838,396
3,838,397
3,838,398
3,838,399
3,838,400
173DR 3,838,404
173LM 3,838,401
3,838,402
173TP 3,838,403
173R 3,838,405
174EB 3,838,406
174TF 3,838,407
214 3,838,408
258C 3,838,409
286 3,838,410
310R 3,838,411
334 3,838,412
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| | 272 | 232,876 | | 192 | 232,894 | | 230 | 232,912 | | 209 | 232,930 | D30— | 40 | 232,948 | D48— | 4B | 232,966 |
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| | 154 | 232,889 | | 51 | 232,906 | | 9 | 232,925 | | | 232,943 | | M | 232,959 | D92— | 1PP | 232,979 |
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| | | 232,892 | | 179 | 232,911 | | 92 | 232,928 | | 13R | 232,946 | | | 232,964 | | | |

## CLASSIFICATION OF PLANTS

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Frederick B. Dent, *Secretary*

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